

Working Paper, January 2005

Developing New Literacies Among Multilingual Learners in the Elementary Grades

Donald J. Leu, Jr., Jill Castek, Julie Coiro, Mileidis Gort, Laurie A. Henry, Clarisse O. Lima
University of Connecticut

This working paper was prepared as part of the Technology in Support of Young Second Language Learners Project at the University of California Office of the President, under a grant from the William and Flora Hewlett Foundation. Please do not quote without the permission of the author.

Developing New Literacies Among Multilingual Learners in the Elementary Grades

The purpose of this paper is to explore the potential of the intersection between language, literacy, and the Internet for multilingual learners. We suggest that the Internet requires new reading, writing, and communication skills in addition to foundational literacy skills required within traditional book and print technologies. We refer to these new skills the Internet requires as “new literacies” and define them below. We suggest that the Internet: 1) is the most important context for literacy in an information age; 2) requires new literacy skills, strategies, and dispositions in reading, writing, and communication to fully exploit its information and learning potential; and 3) provides special opportunities for multilingual learners and schools in an increasingly globalized world. In this paper, we describe our vision of these new literacies for multilingual learners and the unique potentials they contain for preparing students for a literacy and learning future.

We seek to provide parents, educators, and policy makers with an informed view of exemplary practices for the development of new literacies. The topic is especially important in an increasingly globalized world where the technologies of informational literacy are rapidly shifting from paper and book to screen, search engine, and webpage. Specifically, we address this focal question: *How might we best support the development of new literacies among elementary age children who are simultaneously acquiring language and literacy in both English and their native language?*

We believe the answer to our focal question is best understood by bringing multiple perspectives to the analysis in order to both adequately represent the nature of the question as well as begin to define appropriate solutions. Thus, we have chosen to take a multiple realities perspective (Labbo & Reinking, 1999) to frame our analysis. Using both a Multilingual (Gort, in preparation) and a New Literacies Perspective (Lankshear & Knobel, 2003; Leu et al, 2004), this paper will define a set of principles that address issues of multiple language acquisition, literacy learning, and the important role that Internet technologies increasingly play in reading, writing, and communication across multiple contexts. We begin by exploring principles of language and literacy development from a Multilingual Perspective. Then we explore a separate set of principles from a New Literacies Perspective, describing the new forms of literacy that are emerging with new information and communication technologies (ICT). Next, we define a Globalized Perspective that integrates these two theoretical perspectives, developing a set of common principles that might be used to inform literacy policy and practices.

We then apply this integrated set of principles to several instructional contexts from both out-of-school and in-school environments that might be viewed as exemplars for the acquisition and development of new literacies among multilingual learners in the elementary grades. This analysis permits us to consider how the principles of a Globalized Perspective might be used to support elementary age children who are simultaneously acquiring a new language and new literacies. We conclude with a discussion of the consequences of this analysis for literacy development within both in-school and out-of-school contexts for a nation that seeks to achieve the benefits that diversity provides.

A Multilingual Perspective

The population of the United States is becoming increasingly diverse and multilingual. Currently, one in four of U.S. students lives in a household where English is not the primary spoken language (Crawford, 2004). By the 2030s, students whose first language is not English will make up an estimated forty percent of the K-12 student population in the United States (Center for Research on Education, Diversity and Excellence, 2002). These statistics only begin to describe the explosion of language diversity among the population across the United States. Of particular importance is the historic academic underachievement of this population, when compared to their mainstream peers. For example, results of the National Assessment of Educational Progress show that Latino and African American students in grade 12, on average, read at a level typical of White and Asian/Pacific Islander students in grade 8 (Grigg, Daane, Jin, & Campbell, 2003). Traditionally, the multilingualism and diversity that increasingly defines our society has been viewed as an obstacle to success in a monolingual society.

A multilingual perspective views multilingualism as a powerful national asset, and multilingual students as global citizens who have the potential to create the global connections to build their future in dynamic ways. Promoting communicative and literate exchanges between and among students who can use more than a single language system creates opportunities for developing expertise and knowledge in a variety of forms. Research suggests there are many positive attributes associated with being multilingual including an increase in cognitive flexibility, the ability to think more abstractly, and the ability to think independently of words (Hakuta, 1986; Peal & Lambert, 1962). Multilingual speakers demonstrate superiority in concept formation and also have advantages in metalinguistic and metacognitive awareness, including a positive transfer between languages, and an increased understanding of other cultures and ways of life (Bialystok, 1988; Cenoz & Valencia, 1994; Galambos & Goldin-Meadow, 1990; Peal & Lambert, 1962). Students who speak more than one language at flexibly and fluently perform better than their monolingual counterparts on tests of academic achievement (Bialystok & Hakuta, 1994). These linguistic and cognitive advantages explain the important reasons why nurturing language diversity and multilingualism among learners of all ages is a meaningful step toward providing an education that prepares students for participation in a globalized world.

Although multilingualism is the norm abroad, monolingual orientations still dominate assumptions within U.S. educational systems. While multicultural education and bilingual programs have made teachers in the U.S. more aware of alternative approaches to supporting language and cultural diversity, much more can be done to ensure that all students are provided with positive learning experiences at school and in their communities. Language diversity should not be viewed as a problem that needs to be fixed, but as a respected and desired educational outcome. Supporting multilingual students' language and literacy learning involves embracing the linguistic, cultural, and socio-historical riches that each child brings to the classroom.

Gort (in preparation) provides the following definition of a multilingual perspective of language and literacy development.

A multilingual perspective is based on a holistic view of the bilingual learner including validation of students' cultural and linguistic backgrounds as resources for learning, an understanding of the role of primary language (including literacy) in the acquisition of a new language, and a consideration of sociolinguistic, sociohistorical, and sociocultural

factors that contribute to the child's development and experiences. (p. 5)

Research based principles of a multilingual perspective interpret language development and literacy learning in broadly defined terms, moving beyond what can be tested and examined using conventional assessments. A multilingual perspective incorporates sociolinguistic as well as sociocultural concepts. This perspective acknowledges and encompasses students' entire linguistic, literate, and cultural repertoire including languages, dialects, functions and uses of language and literacy in different contexts. Snow (1992) documents historical trends in second language learning showing how in the past, perspectives came from a linguistic or psycholinguistic philosophy and were focused on the cognitive aspects of learning languages. A more fruitful perspective, she asserts, is sociocultural, which recognizes the importance of societal attitudes and group membership in language learning. Sociolinguistic views examine the connections between language and society, bringing into focus how social relationships are organized within a particular community and how languages are used for particular purposes within specific and broad contexts. Sociocultural factors impact values, attitudes, beliefs and assumptions of language and literacy learning. They relate to past and present relationships between cultural groups in contact. By adopting this perspective, learning experiences are enhanced and extended by linking language, communication and literacy.

A multilingual perspective identifies ten research-based principles for language-learning and literacy development. These principles provide a foundation for examining learning contexts both in and out of school. They include:

1. Language is linked to identity construction.
2. Language abilities develop globally, not linearly, through opportunities to use language in meaningful contexts.
3. Multilingual learning contexts help students understand the universals common to all languages, promoting cognitive flexibility.
4. Oral language can be used as a tool for developing literacy.
5. Language competence is evolving and dynamic.
6. Multilingual/multicultural development is central to critical thinking.
7. Traditional teacher roles and student roles transform in language rich classroom contexts.
8. Power relations play a critical role in social interactions between language learners and target language speakers.
9. Social networks of exchange are powerful learning agents.
10. Reading and writing are literacy processes through which children create and express meaningful ideas in any language.

A multilingual perspective rejects deficit views of "language as a problem" and instead promotes multiple language and literacy development as a personal and national resource. That is, if students who function in more than one language can be taught to share language concepts, an experience that benefits all learners. (See Appendix A for a detailed description of these Multilingual principles.)

A New Literacies Perspective

The nature of literacy is rapidly changing as new information and communication technologies, such as the Internet, rapidly generate new literacies required to effectively exploit their potential for reading, writing, and communication (Bruce, 2003; Lankshear & Knobel, 2003; Leu, Kinzer, Coiro, & Cammack, 2004). Scholars from diverse disciplines, ranging from cognitive science (Gee, 2003; Mayer, 2001) to sociolinguistics (Cope & Kalantzis, 2000, 2003; Gee, 2004; Kress, 2003; Lemke, 1998) to cultural anthropology (Markham, 1998; Street, 2003; Thomas, forthcoming), have begun to recognize these changes to literacy as they begin to study their consequences. As many new heuristics appear to inform this multidisciplinary work, a new perspective about the nature of literacy is beginning to emerge. This perspective, often referred to as “new literacies,” is still in its initial stages but it is clear to most that it will be a powerful one, redefining what it means to be literate in the 21st century (Leu, Coiro, Knobel, Lankshear, in preparation).

The construct “new literacies” is highly contested terrain; the term means many different things to many different people. However, most would agree there are at least three defining characteristics of this perspective:

1. New literacies are central to full civic, economic, and personal participation in a globalized community and, as a result, are critical to educational research and the education of all of our students.
2. New literacies are deictic – they regularly change as their defining technologies change.
3. New literacies are multifaceted – they benefit from analysis that brings multiple points of view to the discussion.

For this analysis, we follow the definition of a New Literacies Perspective used by Leu, Kinzer, Coiro and Cammack (2004), which pays particular attention to the new literacies of the information and communication space that exist on the Internet:

The new literacies of the Internet and other ICTs include the skills, strategies, and dispositions necessary to successfully use and adapt to the rapidly changing information and communication technologies and contexts that continuously emerge in our world and influence all areas of our personal and professional lives. These new literacies allow us to use the Internet and other ICTs to identify important questions, locate

information, critically evaluate the usefulness of the information, synthesize information to answer those questions, and then communicate the answers to others (p. 1572).

While engaging in the five central functions identified in this definition (identify questions, locate information, critically evaluate information, synthesize information, and communicate the answers) individuals from different cultural contexts, who often speak various first languages, connect in new and potentially powerful ways to solve important problems. Thus, the Internet provides important opportunities for increased multicultural understanding and appreciation of the linguistic diversity that defines a global society (Leu, Leu, & Coiro, 2004).

Leu, Kinzer et. al, (2004) identify ten principles as central to a New Literacies Perspective:

1. The Internet and other ICTs are central technologies for literacy within a global community in an information age.

2. The Internet and other ICTs require new literacies to fully access their potential.
3. New literacies are deictic.
4. The relationship between literacy and technology is transactional.
5. New literacies are multiple in nature.
6. Critical literacies are central to the new literacies.
7. New forms of strategic knowledge are central to the new literacies.
8. Speed counts in important ways within the new literacies.
9. Learning often is socially constructed within new literacies.
10. Teachers become more important, though their role changes, within new literacy classrooms. (p. 1589).

A New Literacies Perspective argues that new technologies create new literacies that are increasingly important to our lives in a global information age. Specifically, the nature of reading, writing and communicating is being transformed in fundamental ways through the use of the Internet and other ICTs. Families, schools, and society need to begin to understand these changes if we seek to prepare our children for the world they deserve. (See Appendix B for a detailed description of the New Literacies principles)

A Globalized Perspective for Language and Literacy

Change defines literacy in our increasingly globalized and multilingual world, change that is both the result and the cause of increasingly powerful information and communication technologies that, themselves, rapidly change, prompting continuously newer literacies (Leu, 2000; New London Group, 2000). Any consideration of how to support students with literacy and learning must take advantage of this essential truth. Moreover, we must begin to acknowledge a second essential truth: our nation is no longer a monolingual society. Instead, despite regular resistance to the contrary, our nation is increasingly multilingual and multicultural.

A central issue of both a Multilingual Perspective and a New Literacies Perspective is that fundamental change must take place in our conceptualization of education, both at home and at school, if we hope to prepare all students for their futures in an increasingly globalized world where one's ability to effectively use information within diverse linguistic, cultural, and technological contexts has become essential to fully realize each person's potential. Schools, for example, too often continue to assume that only one language is possible in classrooms. Moreover, they privilege books and other traditional print materials as information sources. Neither assumption is consistent with the realities of today's world. Unfortunately, our mindset, in both society as a whole and in schools in particular, continues to reflect assumptions of a static system, more typical of a monolingual and industrial era.

Increasing numbers of students come to school with primary languages other than English. In addition to new languages, students come to classrooms with new literacies, often developed outside of the classroom (Chandler-Olcott & Mahar, 2003). For the first time in our history, many students now are more literate than their teachers, for many students are literate in the new

technologies of information and communication that remain unfamiliar to many classroom teachers: weblogs, the Internet, search engines, Instant Messaging, text messaging, and many others.

We see a globalized perspective as informing some of the important opportunities for systemic change that are essential to educational systems today. We simply must begin to conceptualize how best to prepare our students for the 21st century by drawing on their experiences in both language and technology as a stepping-stone to a successful future in a global society.

What are the principles of a Globalized Perspective that integrates both a Multilingual and New Literacies Perspective? We believe that they include the following:

1. New realities, inherent in the rapidly changing nature of life in the 21st century, must be recognized as we consider any issue in education but especially issues of language and literacy.
2. New realities provide new opportunities to increase the potential of every student.
3. Linguistic capital and background knowledge that students bring with them to learning contexts are essential resources for their development.
4. Students become important contributors to literacy development.
5. Language and literacy are socially constructed processes.
6. New forms of literacy and language will regularly appear in both out-of-school and in-school contexts.
7. Critical literacies become essential in globalized learning contexts.
8. Home and school connections become even more important within globalized learning contexts though this relationship changes in important ways.
9. While narrative experiences provide important foundations for language and literacy, information and communication become essential elements for globalized learning contexts.
10. Language and new literacy learning should be integrated into authentic social action projects on a global level.

New Realities, Inherent in the Rapidly Changing Nature of Life in the 21st Century, Must Be Recognized as We Consider Any Issue in Education but Especially Issues of Language and Literacy

It is fruitless to consider any issue in education today without grasping the essential nature of the rapid changes taking place in our world. The two most important changes that drive these new realities consist of the rapidly globalizing nature of our world and the rapid changes taking place to information and communication technologies. Each affects the other, increasing the speed with which both changes are taking place.

Globalization places each of us in closer and closer proximity, both physically and intellectually, and results in schools having to confront the realities of the global and multilingual

society in which we all live. Each day, it is less possible for schools, in any society, to maintain the fiction that only a single language exists for literacy and learning.

It is also less and less possible to maintain the fiction that only book technologies, and the traditional print literacies they require, provide essential information for teaching and learning. Manguel (1996) notes that the function of literacy has never been static; it continually changes in different historical, cultural, and technological contexts. In earliest societies, literacy was a way to record sheep, crops, and taxes. Among many religions, it was a way to enforce a common dogma. In a post-reformation world, literacy was viewed as the means to individual salvation by Luther and his Protestant followers. In a Jeffersonian democracy, literacy was seen as essential to the survival of the civic enterprise as informed citizens made reasoned decisions at the ballot box. In an industrial world, literacy was seen as a means to accurately transmit production information from top to bottom in a hierarchically organized company. In the information age in which we live, literacy is essential to enable individuals, groups, and societies access to the best information in the shortest time to identify and solve the most important problems and communicate this information to others. Problem solving, information acquisition, and communication are essential to success in the information age in which we live. This has prompted a rapid revolution in the technologies of information and communication, generating new ICT's, such as the Internet, that require new literacies to fully exploit their potential. New reading comprehension skills are now required by the Internet such as using a search engine effectively, reading search engine results to locate the best information in the shortest time, critically evaluating the accuracy of information in a context where anyone may publish anything, and many more (Coiro, 2003). Blog technologies, IM, email, presentation software, web editors and many other new technologies for communication also demand new writing skills.

In short, globalization and the rapid spread of newer and newer ICTs means that educational systems and the families which support them must confront the new realities posed by increasingly multilingual societies and the new literacies that new information and communication technologies require.

New Realities Provide New Opportunities to Increase the Potential of Every Student

While some view the coming confrontation between schools and the new realities of both multilingualism and new literacies as a challenge that must be overcome, we prefer to see these as important new opportunities for societies to increase the learning potential of students. Becoming proficient in more than a single language provides multiple ways for conceptualizing and solving a problem. Even more importantly, being sensitive to the validity of multiple languages means that one is more capable of communicating effectively with others who come from different linguistic and cultural traditions. Finally, recognizing the reality of the multiplicity of different languages in today's world means that one can take full advantage of the potentials for problem solving that become manifest with different ways of looking at the world.

Conflicts around the world, based largely on the inability of different cultural and religious groups to respect and understand one another, help us to better appreciate the importance of respecting and understanding diverse cultural traditions. New literacies and new technologies provide new opportunities to help us achieve this goal. One aspect of the Internet's educational potential is the opportunity it provides to increase multicultural understanding and take full advantage of the diversity that defines our lives. Recognizing how to take full advantage of different points of view to solve the increasingly complex problems that define our world will

become increasingly central to the preparation of students. Understanding others and the cultural context from which they come is an increasingly important goal as we build a global village with this new technology.

It is quickly becoming clear that the Internet provides special opportunities to help everyone better understand the importance of appreciating the unique qualities in each of our cultural traditions. No other instructional resource available to classrooms is as rich in its potential for developing an understanding of the diverse nature of our global society and for helping each of our students take advantage of the opportunities that diversity provides. Diverse linguistic and literacy forms provide important opportunities for classrooms to solve common, global challenges.

Linguistic Capital and Background Knowledge that Students Bring With Them to Learning Contexts are Essential Resources for Their Development

Central to seeing the changes to language and literacy as opportunities is to recognize the inherent potential existing in the linguistic capital and background knowledge that students bring with them to learning contexts. The linguistic capital students possess about their own languages may provide powerful resources for communication with others around the world as students work to identify and solve common problems. The background knowledge students possess about new literacies may be used to teach others these new skills; increasingly these “others” may include teachers.

Historically, our society has tended to force all students into a single language and a single literacy assuming that students had little to bring to the learning process. Continuing on this path will increasingly deny important opportunities for literacy and learning. Constructions of both in-school and out-of-school learning need to be based on the understanding that students bring both linguistic capital and background knowledge about new literacies to learning contexts.

Students Become Important Contributors to Literacy Development

Recognizing that students, as well as significant others, possess important information and skills to exchange, means that new ways of organizing contexts for literacy and learning need to be constructed (Gee, 2004; Lankshear & Knobel, 2003). Increasingly, the information and skills that students’ possess is gradually finding its way into literacy and learning contexts in new teaching and learning formats such as Book Clubs (Raphael, Florio-Ruane, & George, 2001), inquiry approaches (Lee & Smagorinsky, 2000), and telecollaborative projects (Harris & Jones, 1999) or Internet Project (Leu, Leu, & Coiro, 2004). This has also prompted the many new, out-of-school models such as KidProj, D.U.S.T.Y., 5th Dimension and others (see the final section) that support student learning, especially when schools fail to take full advantage of the contributions that students can make to their own learning.

Language and Literacy are Socially Constructed Processes

The issue of whether language, as well as literacy, is a more cognitive or social construction has a long and complex history (Vygotsky, 1962; 1978; Piaget & Inhelder, 1969; 1973). The rapid changes to literacy brought about by continually changing ICTs and globalization inevitably shift the calculus of this issue to one that is far more socially constructed than ever before. This has important consequences for how we view the acquisition of both oral language and new literacies.

Since students bring important linguistic capital to the classroom, they play an increasingly

important role in their own learning, making it essential to recognize the social aspects of language learning. The same is true for new literacies. The technologies of literacy change too quickly and are too extensive for us to be literate in them all. Each of us, however, will know something useful to others and can exchange that knowledge about a new literacy. Reading an instructional manual for a new technology, for example, is often less efficient than simply asking another student who is familiar with the software. Social learning strategies, such as knowing who knows what type of information and how to quickly exchange it, become essential when literacy technologies rapidly change.

Social learning strategies also become important because networked technologies for literacy permit us to communicate much more extensively with people around the world. Much of the new information that becomes available on the Internet resides in the people who inhabit it, not in isolated texts. In order to access this type of information, we must develop new social components to our literacy skills. Engaging in collaborative projects with other people around the world prepares learners in important ways for their future with networked ICT.

New Forms of Literacy and Language Will Regularly Appear in Both Out-of-School and In-School Contexts

We have seen how change increasingly defines the nature of literacy in an information age. Literacy rapidly and continuously changes as new technologies for information and communication repeatedly appear and new envisionments for exploiting these technologies are continuously crafted by users. Most importantly, these new technologies for information and communication, because they are increasingly networked technologies, permit the immediate exchange of even newer technologies and envisionments for their use. This speeds up the already rapid pace of change in the forms and functions of literacy, increasing the opportunities that become available to prepare students for their literacy futures. Today, continuous, rapid change regularly redefines the nature of literacy.

Globalization also prompts the appearance of new language forms in school classrooms, whether it is prompted by new students, from new cultures, or by technologies that put us immediately in touch with other students and classrooms from around the world. The rapid spread of new words and symbols appearing on Instant Messaging technologies is just the beginning of these new language forms, whether in the workplace (Isaacs, Walendowski, Whittaker, Schiano, & Kamm, 2002) or in less formal settings (Gross, Juvonen, & Gable, 2002).

Critical Literacies Become Essential in Globalized Learning Contexts

Earlier we discussed how the Internet and other ICTs increase the need for new, critical literacies while reading and communicating on the Internet. We framed that discussion around the need for these new literacies since anyone could publish anything and students needed to know how to distinguish more accurate from less accurate information. Both the nature and the need for new critical literacies expand with the globalization of both language and literacy. New critical literacies will be required that enable one to understand how to read between the lines of information that arrives with different cultural assumptions about the world. Each of us brings our own cultural assumptions to the information we share. Each of us will need to become increasingly aware of how to “read” these in message we receive from individuals who have a different primary language from us, even if the message appears in our own primary language. Evaluations of information will need to incorporate new and broader configurations.

Home and School Connections Become Even More Important Within Globalized Learning Contexts Though this Relationship Changes in Important Ways

Connections between school and home have always been important. They have, however, been largely unidirectional, from school to home, as schools have provided information to families about how students best learn and communicated the policies that schools institute to promote these views (Epstein & Sheldon, 2002). In ethnically and linguistically diverse homes, the picture is further complicated by the mismatch, or disconnect, between the culture of the school (mainstream) and the culture of the home (other). In globalized classrooms, the nature of this relationship is more fully equalized. Homes are viewed as important repositories of cultural and linguistic knowledge as well as sources where new literacies often emerge when students are working online. This will make home and school connections even more important than before and require us to look in new ways of framing sources of information and authority around this issue.

While Narrative Experiences Provide Important Foundations for Language and Literacy, Information and Communication Become Essential Elements for Globalized Learning Contexts

Narratives provide important entry into the world of story and learning for young children, whether in oral language contexts or in written (Anderson, Heibert, Scott, & Wilkinson, 1985, Applebee, 1978). They are also a traditional means for carrying important cultural lessons from one generation to another through oral language traditions (Rosenblatt, 1938/1976). In a globalized learning context, narratives are also important since they may be used to share important cultural lessons between individuals from different cultural traditions. Ultimately, however, the genre of informational texts become central to language and learning in globalized learning contexts since these information sources are essential to acquiring content area knowledge. Unfortunately, however, the vast majority of texts found in classrooms today remain narrative in nature (Duke, 2000).

Language and New Literacy Learning Need to be Integrated Into Authentic Social Action Projects on a Global Level

Informational experiences should not simply be used to acquire knowledge. To do so would waste important opportunities to improve the world we inhabit and limit the potential of any learning experience in important ways. In a world that is quickly shrinking, we need to prepare students with an orientation and a commitment to using information to improving our global community. Thus, social action projects between classrooms from different cultural contexts appear to be a promising means by which we might take full advantage of students' multilingual potential. They also contain the power inherent to simultaneously promote learning and the new literacies that will increasingly define our students' future.

A Globalized Perspective on Language and Literacy: A Summary

Prompted by the powerful, reciprocal forces of globalization and information technology, the nature of language and literacy are rapidly changing. As a result, we need to reconceptualize our traditional, normative conceptions of a monolingual, book-based classroom, as the primary context for learning among school-aged students. Learning takes place increasingly in both in-school and out-of-school contexts. Most importantly, however, we need to begin to view two new sources of knowledge as important strengths that increasing numbers of students are bringing to learning contexts: the cultural and linguistic capital of multilingual students as well

as the new literacies of the Internet and other ICTs. Both will be essential to their future.

Our globalized world is multilingual, of course. It is also being tightly connected by Internet technologies. The impact of these twin realities for language and learning issues will increasingly be felt by every nation, but especially quickly in the U.S., given our increasingly diverse population and the rapid appearance of the Internet here.

The achievement gap between students of diverse backgrounds and their mainstream peers remains substantial and troubling. Classrooms, while traditionally resistant to change (Cuban, 2001) are coming under new pressures to respond to these changes (Leu & Kinzer, 2000; Leu, Kinzer, et al, 2004). Alternative contexts are also appearing outside of school to foster the important language and learning needs of students, when these are not being met in schools. A Globalized Perspective helps us to understand these changes. Most importantly, a Globalized Perspective allows us to evaluate both in school and out of school technology use and learning contexts in order to evaluate their utility and to draw implications for schools, homes, and public policy initiatives.

Instructional Exemplars: Developing New Literacies Among Multilingual Learners in the Elementary Grades

How might we best support the development of new literacies among elementary age children who are simultaneously acquiring language and literacy in both English and their native language? This is the question we seek to answer. Having established a useful theoretical perspective that integrates elements of both a Multilingual Perspective and a New Literacies Perspective, we can now apply the principles of this Globalized Perspective to analyze several examples of learning projects from out-of-school settings, in-school settings, and combined settings. This analysis will allow us to consider how the principles of a Globalized Perspective might be used to support elementary age children who are simultaneously acquiring a new language and new literacies. It will provide useful direction for those interested in planning literacy and learning futures using technology to support multilingual learners. We will analyze three different sets of projects:

1. Out-of-school technology projects (Fifth Dimension and D.U.S.T.Y.);
2. Online international projects often used in schools (project registry sites, Water Quality, and International Schools Cyberfair); and
3. Combined projects that may be used in school or out of school (Kid Link: KIDPROJ and Kid Link: KIDFORUM).

A summary of our analysis, according to the principles of a Globalized Perspective, appears in Table 1. We recognize that the purpose of this framework and analysis is not definitional. It serves, however, as a useful heuristic to begin to understand emerging uses of new technologies for literacy and learning. We also recognize that our analysis, by necessity, is framed from an etic rather than an emic (Pike, 1954) perspective. Being an “outsider,” reading research about these projects, imposes some limitations in our analysis. Finally, we should recognize that each exemplar succeeds because it regularly adapts to new conditions. Thus, our analysis may not be based on the most recent changes, since it has been driven largely by published work, which

always is a bit behind the most recent iteration of any exemplar.

Out of School Technology Projects

Fifth Dimension

The Fifth Dimension distributed literacy consortium (Blanton, et al. in preparation) is designed to promote elementary children’s cognitive development and improve their computer and print literacy. Students from a number of nations around the world as well as students in Boys and Girls Clubs, YMCAs, YWCAs, and recreation centers participate and work with university students who serve as learning guides. By mixing play and education in a fantasy world setting, children are challenged to work through various game-based activities that require decision-making to solve complex problems. (See <http://129.171.53.1/blantonw/5dClhse/clearingh1.html> for a more complete description.) Participants learn to use new technologies along with communication skills as they participate in semi-structured after school activities. The Fifth Dimension consortium seeks “a different way for kids to use computers; encouraging a different way to think about intellectual challenges, of playing with other children, and a different way for adults and children to interact with each other.” (Fifth Dimension Distributed Literacy Consortium, in preparation, p. 7)

In addition to playing traditional board games and strategy-rich computer-based games, the children interact with an electronic figurehead (wizard/wizardess, Maga, or Golem) who lives in the Internet. In the mythology of the Fifth Dimension, the wizard/ess acts as the participants’ magic imaginary friend who provides games and other materials, settles arguments, shares value lessons and helps with computer problems. This fantasy being writes e-mail and chat messages to the entire learning collective on a regular basis to communicate with and encourage children in their endeavors. Messages often introduce challenges that require participants to locate information using either the Internet or book-based resources in order to provide interactions with both narrative and information texts. Resources and information are shared collectively with other children to promote a sense of accomplishment and positive self-concept. Students are encouraged to explore their cultural traditions throughout these tasks designed to explore historic and religious traditions. The Fifth Dimension invites expressions of personal identity and celebrates cultural diversity through guided learning opportunities (Blanton, Greene & Cole, 1999).

A key design feature of the Fifth Dimension is networked access among participating sites. Organizers recognize collaboration in language and literacy development and provide communication resources via the Internet that allow the collective to distribute information easily and quickly. This allows organizers to support the interests of participants at any level of the system by sharing ideas and resources. While some sites cultivate active relationships with one another, others focus more on activity and communication among participants through the use of community resources (Blanton, Simmons & Warner, 2001).

The Fifth Dimension’s educational activities link university and community institutions around a common goal of improving student achievement. Children are empowered to think, act, reflect and develop new skills as they work in partnerships with others. University students serve as learning guides who motivate and support children to set goals and achieve them. Partnerships build upon the background knowledge and linguistic capital each student brings to the learning context, using personal interests to guide learning aims. These facilitators coordinate learning within and across contexts, cultures and languages to help children seek,

interpret and integrate new knowledge as they engage in problem solving. Partnerships set in motion a new approach to learning that has powerful social implications for redefining teaching and learning (Blanton, Moorman, Hayes & Warner, 1997).

La Clase Magica

La Clase Magica is a Fifth Dimension based learning model developed as a multi-system collaboration between the University of San Diego, the Latino community, and local families. This project is one of the longest running and best-documented efforts to use technology to promote the academic achievement and self-esteem of students of diverse backgrounds. A longitudinal study (data collection occurred between Fall 1989 and Spring 1996) has followed participants over several years to determine how many students have gone on to enroll in college as one measure of long-term impact on learning (Vásquez, 2003). The program's design uses a cross-cultural educational approach called "collaborative critical inquiry" (Cummins & Sayers, 1995) with the goal of achieving a multi-faceted, multi-cultural curriculum that will promote social change. La Clase Magica shares characteristics with the Fifth Dimension model in that it also promotes cognitive development, literacy learning, and higher level thinking for meaningful purposes in a motivating context for elementary students (Vásquez & Duran, 2000). This after-school club provides semi-structured computer mediated activities and university mentors for each participating student. At the heart of the project is a computer game in which students attempt to complete a maze using reading, writing, and strategic thinking to solve problems introduced in each new room. Students communicate online with a wizard (La Maga) to get help in solving problems. Cultural communities are used to build affinity among participants as identity concepts are explored. Learning partners support student-centered pedagogy geared toward meeting individual needs. Educators promote the idea that relevant pedagogy must adapt to the child and not all activities are designed for all children (Vásquez, 2003).

Originally, the project failed to attract Mexican American students even though it was located in the community where the students lived. Several changes were implemented to meet this challenge, including relocating the project to a church attended by Mexican American families, changing the language used from English to Spanish, and redesigning activities so that they became culturally-relevant to participants. Additionally, bilingual community members were invited to participate in the project's decision-making process, and eventually took on the major responsibility for running the project.

Teaching and learning concepts embedded in this model transcend conventional notions of teaching and learning. University mentors and participating students co-construct knowledge as they learn together. Shared knowledge often takes the form of strategic thinking that extends the limits of the physical context and expertise of the educators. As a result, participation in La Clase Magica redefines the relationship between teacher and student (Vásquez, 1994). Children form bonds with University personnel who become role models assisting them with the development of a positive self-concept as a bilingual individual.

The creation of interconnectedness between the local and the global is nourished through participation in a multilingual/multicultural learning exchange. Learning activities are designed to have cultural relevance by addressing the local socio-linguistic context from which the participating students come (Vásquez, 1994). As a member of a cultural and linguistic group created within the learning setting, student's experiences and languages are valued and promoted.

Participants are invited to celebrate and analyze cultural literature, traditions, and values that demonstrate they are able, and can make a significant contribution to society.

D.U.S.T.Y.

Digital Underground Story Telling for Youth (D.U.S.T.Y.) is a partnership between the University of California and the Prescott Joseph Community Center in West Oakland. The project aims to support youth ages 7 – 18 in acquiring computer-related literacy skills by providing opportunities to explore emerging forms of literacy, language and information communication technologies (Hull & Zacher, 2004). D.U.S.T.Y.'s after-school programs encourage participants to think in new ways about self-expression, identity, and community. Participants learn the art of digital composition by composing their original works. During sessions lasting 12-14 weeks, students create original 3-5 minute multi-media compositions consisting of an author recorded text reading, accompanied by photographs, images, videos, drawings, and music. Digital stories offer participants flexibility in self-expression through new forms of textual practice that juxtapose narratives with images (Hull, 2003). These personal narratives transform poetry, short stories and essays into multi-media compositions that celebrate family, community, and culture.

D.U.S.T.Y.'s after-school programs make technology resources accessible to youths who don't have access in their homes or communities (Hull & Zacher, 2004). Sessions take place once or twice each week (depending on the age group and enrollment) and are facilitated by a trained educator. Organizers recognize the role social construction and collaboration plays in all learning activities and pair each student with a University undergraduate who acts as a tutor/mentor. Structured group lessons support students through the composition process by utilizing a writer's workshop format. Group members provide feedback and revision suggestions to improve the overall tone and quality of the work. Organizers support the acquisition of technology and search skills by providing techniques and support in locating Internet images. The primary interface for multi-media composition, Adobe Premiere, is taught in several stages over the course of the program. One hour of each session is dedicated to homework completion (Hull & Zacher, 2004).

Participants reflect the diversity of the surrounding community and include youth from a variety of backgrounds and nationalities. Although most projects are composed in English, students are welcome to communicate in the language of their choice, as all voices are valued. D.U.S.T.Y. highlights the role of multi-media composing as an artistic expression of identity and affinity. Activities such as digital storytelling offer youth the opportunity to communicate via multiple modalities and provide students a tangible way to develop their own definitions of who they are and who they would like to become (Hull, 2003). D.U.S.T.Y encourages appreciation of diversity by promoting social practices geared toward celebrating digital storytelling as an important form of self-expression. Public showings invite community members and families to play an important role in supporting student learning.

Online International Projects Often Used in Schools

Project Registry Sites

Internet projects are designed and produced by numerous organizations and individuals around the world for students from different locations to complete together online. These projects focus on developing collaborative partnerships between students, classrooms and schools to promote learning in various topic areas. Several Internet Project Registry sites help organize and coordinate projects for classroom teachers. Three such sites are Global School Network (<http://www.gsn.org/gsh/pr/index.cfm>), Oz Projects (<http://ozprojects.edna.edu.au/>), and iEARN (<http://www.iearn.org/projects/index.html>). Teachers can join existing projects or develop one of their own.

Global School Network is a virtual clearinghouse for collaborative projects from across the globe. The Global SchoolNet Foundation and other reputable organizations host all registered projects within the registry. This site provides outstanding partner projects conducted by teachers worldwide. Projects focus on providing global online collaborative learning opportunities for students in K-12 classrooms.

OZ Projects is a project registry site from Australia that celebrates online curriculum projects and the world of unique learning opportunities. The site assists teachers in locating suitable online curriculum projects and provides access to a host of resources to support classroom involvement. This site also provides access to online tools (e.g. links to software, teaching tools, and assessment options), the latest project news, and a calendar of upcoming events. The objectives set forth by the Oz Projects site highlight the value of online curriculum projects, the use of changing technologies, and promote national and international collaboration among students. The Oz Projects website is an initiative of the Education Network Australia (EdNA) Schools Project supported by the EdNA School Advisory Group. Its development was funded by the Commonwealth of Australia and the South Australian Department of Education, Training and Employment division.

Projects within iEARN are designed and facilitated by participants to fit their particular curriculum and classroom needs and schedules. Upon membership, the iEARN network is open to all teachers and students at a school, with resources available for finding iEARN projects across age levels and disciplines. IEARN features a Learning Circle, which contains highly interactive, project-based partnerships among small numbers of schools located throughout the world. All iEARN projects involve a final "product" or exhibition of the learning that has taken place as part of the collaboration. These have included magazines, creative writing anthologies, websites, letter-writing campaigns, reports to government officials, arts exhibits, workshops, performances, charity fundraising, and many more examples of youth taking action as part of what they are learning in the classroom.

Bucket Buddies

Bucket Buddies (<http://www.k12science.org/curriculum/bucketproj/index.html>) is an example of a curriculum-based inquiry project available on the Internet for elementary level students. In this project, students team up with other students from around the globe to test fresh water samples in their community. Students collect samples of water from local ponds to answer the question: Are the organisms found in pond water the same all over the world? In this project, students attempt to determine whether or not the same fresh water macro-invertebrates will be found in different locations. Participating classes collect samples from ponds near their schools and use a variety of resources to identify the macro-invertebrates (animals lacking a backbone and visible without the aid of a microscope) in the samples. The students then share their identifications with other project participants and use the

collected data to answer the central question: Did classrooms sampling fresh water sources around the world find the same organisms? Finally, the students publish their conclusions in a report, which is posted to the project web site.

International Schools Cyberfair

International Schools Cyberfair (<http://www.globalschoolnet.org/gsh/cf/>) is an international learning program that encourages youth to connect the knowledge they learn in school to real world applications. Currently in its ninth year, the program averages about 200 submissions each year and since its conception, has brought together more than one million students across 100 countries. Its purpose is for students, their schools and their local communities to use the Internet to share resources, establish partnerships and work together to accomplish common goals. Students work collaboratively to research and then showcase online what is special about their local community. Local and international collaboration through information and communication technologies is a key aspect of the program. Students are also encouraged to serve as “ambassadors”, sharing what they’ve learned in a way that contributes back to their local communities. Through their participation in the project, students from many cultures are united as they learn to (a) collaborate with fellow students and their community; (b) conduct original research; (c) create a web project; (d) evaluate their work and the work of others; and (e) be ambassadors to showcase their work.

As part of the learning process, each student is asked to evaluate up to six other project submissions and from this review, an international panel of adults judges the top forty projects. Winners are announced at an annual global event that takes place via the Internet. Recognition is given to the best projects in each of eight categories: local leaders, businesses, community organizations, historical landmarks, environment, music, art, and local specialties. Award-winning projects showcase people and programs that are actively providing solutions or solving problems. Interestingly, although students from countries around the world submit projects, all projects and their accompanying narrative descriptions are created or translated into English, and only a few projects are shared in the students’ native language. Winning projects for 2004 can be viewed at <http://www.globalschoolnet.org/gsh/cf/winners/winners2004.html>

Online International Projects Used Both in School and Out of School

Kidlink

Kidlink (<http://www.kidlink.org>) is an international, volunteer organization that seeks to promote a global dialogue among students from around the world. Since its creation in 1990, students from 162 countries have participated in Kidlink’s activities, in over 20 languages, either as individuals or with their classes and teachers at school. The organization offers a translation service that is available and run by volunteers. There are several elements to Kidlink. We report on only two: KidProj and KidForum.

KidProj

KidProj is the area in Kidlink that provides opportunities to plan, design, and implement collaborative, Internet projects. It is a place for the students to share experiences, exchange ideas and make friends. A belief in multiculturalism is central to KidProj. Diversity in languages, perspectives, beliefs, knowledge and practices are all valued by the participants, while they

discuss common problems and develop strategies to solve them in a globalized world. This empowers students to take ownership of their own learning, encourages inquiry and discovery, and improves literacy and analytical skills. The goal of KidProj is to develop collaborative, problem solving opportunities for students to become more aware and engaged citizens in the future. Participants also develop positive attitudes toward technology, using a variety of media and formats to effectively communicate information and interact with peers, experts, and other audiences.

KidProj's projects encourage many expressive ways to communicate across language barriers building bridges among the cultures. Through drawings, pictures, collages, photographs, sound and video, participants start to develop global communication by telling the stories of their own every day life. And as they work together with other students they begin to recognize and celebrate their cultural diversity.

KidForum

KidForum (<http://www.kidlink.org/KIDFORUM/>) is Kidlink's way of offering a variety of topics, scheduled in advance, to help the children of the world discuss matters of importance to them. Usually, school classes participate in KidForum topics, but individual children may also participate. Using KidForum, teachers can work with one another and with classes around the world to develop a better understanding of the world around them and how our globalized community benefits by people collaborating to solve common problems.

Patterns in This Brief Analysis of Exemplars

What can we learn from this brief review of exemplary projects that moves us closer to greater recognition of the fundamental changes that lie ahead for both multilingualism and new literacies? There are both overall conclusions and also conclusions about the different contexts in which these efforts appear: in school, out of school, or both in and out of school.

First, several overall conclusions are clear from looking at the projects in Table 1. Most obvious is that we are beginning to see the initial stages of language and literacy practices that recognize the globalization of our learning space. Some, like La Clase Magica and D.U.S.T.Y. are just beginning to recognize the global nature of these new learning spaces while others, like KidProj, KidForum, Project Registry sites, and CyberFair, have been quicker to see the potential in globalized learning spaces with new technologies, new literacies, and the potential benefits that multiple linguistic contexts provide for learning. In all cases, though, we have learning contexts beginning to provide us with important insights about how best to build a global learning community around a globalized perspective that recognizes both multilingualism and new literacies.

Second, we see that technology projects seem to work best when they present students of diverse backgrounds with challenging, generative tasks that require them to read, write, and think in new and demanding ways. The time, energy and thought students devote to participate effectively in these projects suggest that they are readily able to take advantage of constructivist forms of instruction that give them the knowledge and strategies needed to engage with new forms of literacy and electronic media.

We can also see that none of these exemplars recognize explicitly that changes to literacy are likely to be a regular feature in our future because new technologies will continuously appear

(Principle #6 in Table 1). There is a general failure to recognize that we are in a period of continuous change in the nature of literacy. Not a single exemplar has consciously recognized the deictic nature of literacy as new technologies regularly require new literacies. There may even be a tendency in each project to generally resist new technologies, since these create important challenges for a project based on an earlier set of technologies. Change is never easy to accommodate once a learning space structure has been established. And yet, students will need to be prepared for a landscape in which technologies and literacies continuously change. Central to this world of literacy as deixis is that students will increasingly need to be prepared to learn how to learn continuously changing literacies from continuously changing technologies, rather than to simply master a fixed set of literacies. Learning how to learn will generalize far better to a landscape of continuous change in technologies and the literacies they require to effectively use them.

In addition, there are some patterns related to the location where a project occurs. Projects like *La Clase Magica* recognized early on that changes were necessary in order to attract local Mexican American students. Housing the project in the community where these students lived was not enough; if the project were to be accessible to students it needed to be moved to a centralized location that their families frequented, i.e., a popular church. Further, engaging the local community in the project, including bilingual community members who speak the language(s) of and share a common cultural background with the students being served, become crucial components of successful projects. Thus, For English language learners, technology projects must be rooted in the cultures and communities of the students being served.

We also see that out-of-school projects less frequently engage students in social action projects on a global level (Principle #10 in Table 1). This may be due to the fact that many of these projects have yet to fully connect their work with the work of other children around the world, a potential more fully realized in combined and in-school projects. This is not to say, of course, that all classrooms engage in this, only that the potential is there for classrooms to do so through combined projects like *KidProj* and *KidForum* and in-school projects like the various project registry sites and specific projects such as *Bucket Buddies* and *International Schools CyberFair*.

On the other hand, the out-of-school projects that we analyzed appear to more often recognize the importance of various languages students bring with them to learning spaces as well as their background knowledge about new literacies (Principle #3 in Table 1). In-school projects do not always do this, though the potential does exist. Moreover, recent English-only initiatives in California, Arizona, and Massachusetts severely limit the ability of schools to use languages other than English for instructing English language learners.

It is clear that we still have much to accomplish in this area. Many of these online experiences do not yet fully take advantage of the opportunities inherent in online connections between learners around the world. More often, learning contexts focus on more narrative experiences, identity construction, and engagement. Less often, they take advantage of online possibilities to use information to solve problems that are important within a global context, supporting students in their ability to work with others who speak a different language, who bring different cultural perspectives to an issue, and who develop new literacies as they engage in important collaborative work.

Implications for Public Policy, Schools, and Educational Organizations

We conclude this paper with a discussion of the consequences of this analysis for literacy development around both in-school and out-of-school contexts. We begin with what may be most obvious from this analysis: new visions are emerging of the important possibilities for supporting the development of new literacies among elementary age children who are simultaneously acquiring language and literacy in both English and their native language.

A Globalized Perspective suggests that there are special potentials inherent in the multilingual nature of our world that are being realized for children who are acquiring language and literacy in both English and their native language. This perspective suggests that these children bring special abilities to a globalized learning context involving new literacies and the Internet. It is essential that both in-school and out-of-school literacy and learning experiences begin to exploit these special affordances. And to do so, we must begin to fashion a new vision of what is possible, a vision based on new possibilities, not old limitations. New literacies provide unique opportunities for students who speak a language other than English to become privileged in learning contexts, since the Internet is a space where many different languages and cultural contexts appear. How might we best support the development of new literacies among elementary age children who are simultaneously acquiring language and literacy in both English and their native language? The answer to this question is not an easy one when systemic change is called for. It will require change at all levels of the educational system, including access issues, professional development, school leadership, classroom instruction, and assessment. New visions of what is possible will need to be crafted. We have tried to assist this process by carefully defining the major components of a Globalized Perspective so that others may also see the new potentials in new literacies and new technologies for multilingual students. This type of vision will be required to assist the many elements of the complex educational system we have in this nation.

Access, of course, will be a central issue. Families of students of diverse backgrounds often lack the resources to make technology available at home. Unlike their mainstream peers, whose homes often have computers and Internet access, students of diverse backgrounds usually rely on schools and other institutions for opportunities to engage in productive uses of technology. This means that, for students of diverse backgrounds in particular, schools, homes, and after school gathering locations will need to have full access to the important technologies of the Internet and other ICTs. This is essential for all students to engage in the types of literacy experiences we envision where students use the Internet to identify important problems, search for information related to those problems, critically evaluate information that appears, synthesize the most relevant information to solve the problem, and then communicate the solution to others.

Professional development will also be a central issue. Teachers as well as instructional leaders in out-of-school settings will need to be literate in the new literacies of the Internet and other ICTs if they hope to pass on these literacies to students. Currently, schools only provide 20% of the recommended level of professional development in this area (Leu et al, 2004). Clearly, more will be required if we are serious about meeting all students' needs. In addition, teacher education programs will need to also include new literacies and the potentials of multilingual students in their preparation programs.

School leadership will also be called for since few changes take place in school settings without a leader who possesses a vision of change. Superintendents, curriculum directors, and

principals will all need to see the potential in new literacies, the Internet, and multilingual learners before they can provide the support that is required in the classroom.

Since so much of instruction is currently driven by state standards and since these seldom include new literacies in the standards for reading and language arts, change will have to take place at this level as well. State departments of education will need to rethink their recently completed definitions of what it means to be a reader and a writer in the 21st century.

More importantly, state assessments will need to change to include new literacy skills such as searching for information, reading and comprehending search engine results, critically evaluating information resources, and communicating with various tools such as Instant Messaging, email, blogs, and other new technologies. This will not be easy to accomplish. New literacies, such as reading on the Internet or within other ICT, are not included on any state assessments, and most states have no immediate plans to include these within literacy assessments (Leu & Ataya, 2002). Moreover, most states have seen the assessment of new literacies, such as comprehending text on the Internet, composing e-mail messages, or writing with a word processor, as a technology assessment issue, not a reading or writing assessment issue. This continues to occur even though the ability to locate, read, and evaluate information on the Internet is increasingly a part of our daily lives (Lebo, 2003).

One cannot be especially optimistic about changing state assessments. Consider, for example, that one of the most obvious changes, enabling any student who wishes to use a word processor instead of a pencil on state writing assessments has yet to occur in any state. This continues despite evidence that nearly 20% more students are able to pass the Massachusetts state writing assessment when permitted to use word processors (Russell & Plati, 2000).

And, of course, even more profound shifts will need to occur in the manner in which we approach students who are acquiring English along with their native language. We must begin to value the linguistic and cultural capital these students bring to the classroom. We must begin to forge honest and tighter connections between home and school, respecting the cultural traditions embodied in each of our students. And, we must begin to support these children in using their native language skills for the important communication opportunities that lie on the Internet so that all students in their class may benefit from their expertise.

Perhaps just as important is the well-documented tendency for schools to provide students of diverse backgrounds with literacy instruction that centers on lower level skills rather than higher-level thinking. For example, Fitzgerald (1995) concluded that English language learners tended to receive instruction heavily oriented toward lower level skills, such as phonics and pronunciation. Studies of elementary schools indicate that students of diverse backgrounds are frequently placed in the lowest reading group within the classroom or sent to remedial reading classes (Bartoli, 1995). Instruction in these situations focuses on lower level skills of decoding with little attention to comprehension and higher level thinking observed in reading instruction for other students (Allington, 1983). Research in secondary schools reveals the same pattern. Oakes and Guiton (1995) studied a large urban high school and found that a disproportionate number of Latino students were placed in the vocational track, where teachers did not have high expectations for their academic performance and did not provide them with challenging content. This tendency prevents students of diverse backgrounds from gaining experiences with the generative potential of technology and from developing the cognitive strategies required to engage successfully in new forms of literacy.

Equally profound shifts will be required as we consider out-of-school literacy and learning experiences. The tendency is to think in terms of providing software solutions to learning English at home. While undoubtedly this will be helpful, far more powerful language and literacy experiences may be obtained by more collaborative environments in after school centers and clubs, similar to those pioneered by La Clase Magica, Fifth Dimension, and D.U.S.T.Y.. This may be accomplished if these programs turn their attention to the greater collaboration possible with students in other nations over the Internet and if these collaborations focus on important global issues that may be improved with joint action around the world.

If we are able to bring greater understanding about the potentials that lie in our students who speak a native language other than English and in the new literacies of the Internet, there is little we cannot accomplish. We can shift our perception of multilingual students from a problem to be solved to an opportunity for learning; we can shift our perception of the Internet as simply a technology to viewing it as a new and very powerful context for literacy learning; and we can begin to bring our common intelligence to bear on important cultural, environmental, social, and religious conflicts that populate our planet.

REFERENCES

- Allington, R. L. (1983). The reading instruction provided readers of differing abilities. *Elementary School Journal*, 83(5), 548-559.
- Anderson, R.C., Hiebert, E.H., Scott, J.A., & Wilkinson, I.A.G. (1985). *Becoming a nation of readers: The report of the Commission on Reading*. Washington, DC: The National Institute of Education.
- Applebee, A.N. (1978). *The child's concept of story: Ages two to seventeen*. Chicago: University of Chicago Press.
- Baker, C. (2001). *Foundations of bilingual education and bilingualism (3rd edition)*. Clevedon: Multilingual Matters.
- Bartoli, J. S. (1995). *Unequal opportunity: Learning to read in the U.S.A.* New York: Teachers College Press.
- Bialystok, E. (1988). Levels of bilingualism and levels of linguistic awareness. *Developmental Psychology*, 24 (4), 560-567.
- Bialystok, E. (1997). Effects of bilingualism and biliteracy on children's emerging concepts of print. *Developmental Psychology*, 33 (3), 429-440.
- Bialystok, E. & Hakuta, K. (1994). *In other words: The science and psychology of second language acquisition*. New York: Basic Books.
- Blanton, W.E. et al, in preparation
- Blanton, W. E., Greene, M. W., & Cole, M. (1999). Computer mediation for learning and play. *Journal of Adolescent and Adult Literacy*, 43(3), 272-278.
- Blanton, W.E., Moorman, G.B., Hayes, B.A. & Warner, M.L. (1997) Effects of participation in the Fifth Dimension on far transfer. *Journal of Educational Computing Research*, 16 (4), 1-8.
- Blanton, W. E., Simmons, E., & Warner, M. W. (2001). The Fifth Dimension: Application of cultural-historical activity theory, inquiry-based learning, computers, and telecommunications to change prospective teachers' preconceptions. *The Journal of Educational Computing Research*, 2, 214-225.
- Bruce, B. C. (Ed.). (2003). *Literacy in the information age: Inquiries into meaning-making with new technologies*. Newark, DE: International Reading Association.
- Cenoz, J., & Valencia, J. F. (1994). Additive trilingualism: Evidence from the Basque Country. *Applied Psycholinguistics*, 15, 195-201.
- Center for Research on Education Diversity and Excellence. (2002). *A National Study of School Effectiveness for Language Minority Students' Long-Term Academic Achievement Final Report* Accessed June 22, 2004 from: http://www.crede.ucsc.edu/research/llaa/1.1_final.html

- Chandler-Olcott, K., & Mahar, D. (2003). "Tech-savviness" meets multiliteracies: Exploring adolescent girls' technology-mediated literacy practices. *Reading Research Quarterly*, 38, 356-385.
- Cope, B. & Kalantzis, M. (Eds.) (2000). *Multiliteracies*. London, UK: Routledge.
- Coiro, J. (2003). Reading Comprehension on the Internet: Expanding our understanding of reading comprehension to encompass new literacies. *The Reading Teacher*, 56(5), 458-464.
- Crawford, J. (1997). *The English Only Movement, Issues in U.S. Language Policy*, Accessed July 2, 2004 from: <http://ourworld.compuserve.com/homepages/JWCRAWFORD/engonly.htm>
- Crawford, J. (2004). *Educating English learners: Language diversity in the classroom (5th edition)*. Bilingual Educational Services, Inc.: Los Angeles.
- Cuban, L. (2001). *Oversold & underused: Computers in the classroom*. Cambridge, MA: Harvard University Press.
- Cummins, J. (1981). The role of primary language development in promoting educational success for language minority students. In California State Department of Education (Ed.), *Schooling and language minority students. A theoretical framework*. Los Angeles: California State Department of Education.
- Cummins, J. (1984). Wanted: A theoretical framework for relating language proficiency to academic achievement among bilingual students. In C. Rivera (Ed.), *Language proficiency and academic achievement*. Clevedon: Multilingual Matters.
- Cummins, J. (1991). Interdependence of first- and second-language proficiency in bilingual children. In E. Bialystok (Ed.), *Language processing in bilingual children* (pp. 70-89). New York: Cambridge University Press.
- Cummins, J. (2000). Putting language proficiency in its place: Responding to critiques of the conversational/academic language distinction. In J. Cenoz & U. Jessner (Eds), *English in Europe: The acquisition of a third language*. Clevedon: Multilingual Matters.
- Cummins, J., & Sayers, D. (1995). *Brave new schools: Challenging cultural illiteracy through global learning networks*. New York: St. Martin's Press.
- Cummins, J. and Swain, M. (1986). *Bilingualism and Education*. London: Longman.
- Donaldson, M. (1978). *Children's minds*. Glasgow: Fontana/Collins.
- Duke, N. K. (2000). 3.6 minutes per day: The scarcity of informational texts in first grade. *Reading Research Quarterly*, 35 (2), 202-224.
- Edelsky, C., Altwerger, B., & Flores, B. (1991). *Whole language: What's the difference?* Portsmouth, NH: Heinemann.
- Epstein, J.L., & Sheldon, S.B. (2002). Present and accounted for: Improving student attendance through family and community involvement. *Journal of Educational Research*, 95(5), 308–318
- Fillmore, C.J. (1972). How to know whether you're coming or going. In K. Huldgaard-Jensen (Ed.), *Linguistik 1971* (pp. 369-379). Amsterdam: Athemaiim.

- Fitzgerald, J. (1995). English as a second language reading instruction in the United States: A research review. *Journal of Reading Behavior*, 27, 115-152.
- Freire, P. (1993). *Pedagogy of the oppressed*. New York, NY: The Continuum Publishing Company.
- Galambos, S. J. & Goldin-Meadow, S. (1990). The effects of learning two languages on levels of metalinguistic awareness. *Cognition*, 34 (1), 1-56.
- Gee, J. (2004). *Situated language and learning: A critique of traditional schooling*. New York, NY: Routledge.
- Gee, J. (2003). *What video games have to teach us about learning and literacy*. New York, NY: Palgrave MacMillan.
- Gort, M. (2003). Transdisciplinary approaches in the education of English language learners. In D. Kaufman, D. M. Moss, & T. A. Osborn (Eds.), *Beyond the boundaries: A transdisciplinary approach to learning and teaching* (pp. 117-130). Westport, CT: Bergin & Garvey.
- Gort, M. (in preparation). *Strategic codeswitching, interliteracy, and other phenomena of bilingual writing: Lessons learned from classroom-based research*. Manuscript in preparation.
- Grigg, W. S., Daane, M. C., Jin, Y., & Campbell, J. R. (2003). *The nation's report card: Reading 2002* (NCES 2003-521). Washington DC: U.S. Department of Education, Institute for Education Sciences.
- Gross, E., Juvonen, J. & Gable, S. (2002). Internet use and well-being in adolescence. *Journal of Social Issues*, 58 (1), pp. 75-90.
- Hakuta, K. (1986). *Mirror of Language: The debate on bilingualism*. New York: Basic Books.
- Hakuta, K., & D'Andrea, D. (1992). Some properties of bilingual maintenance and loss in Mexican background high-school students. *Applied Linguistics*, 13 (1), 72-99.
- Hakuta, K., Butler, Y. G., & Witt, D. (2000). *How long does it take English learners to attain proficiency?* University of California Linguistic Minority Research Institute Policy Report 2000-2001. (http://www.lmri.ucsb.edu/resdiss/2/pdf_files/hakuta.pdf)
- Harris, J.B., & Jones, J.G. (1999). A descriptive study of telementoring among students, subject matter experts, and teachers: Message flow and function patterns. *Journal of Research on Computing in Education*, 32(1), 36-53.
- Hull, G. (2003). At last, youth culture and digital medial: New literacies for new times. *Research in the Teaching of English*, 38 (2). Retrieved August 30, 2004 from <http://www.ncte.org/library/files/Publications/Journals/rte/0382-nov03/RT0382Last.pdf>
- Hull, G. & Zacher, J. (2004). What is after-school worth? Developing literacy and identity out of school. *Voices in Urban Education*, 3. Retrieved August 26, 2004 from <http://www.annenberginstitute.org/VUE/spring04/Hull.html>
- Isaacs, E., Walendowski, A., Whittaker, S., Schiano, D., & Kamm, C. (2002). The character, functions, and styles of instant messaging in the workplace. In Proceedings of the ACM Conference on Computer Supported Cooperative Work. New York: ACM Press, pp. 11-20.

- Kress, G. (2003). *Literacy in the new media age*. London, UK: Routledge.
- Labbo, L.D., & Reinking, D. (1999). Multiple realities of technology in literacy research and instruction. *Reading Research Quarterly*, 34, 478-492.
- Lankshear, C. & Knobel, M. (2003). *New literacies*. Maidenhead: Open University Press.
- Larsen-Freeman, D. (1986). *Techniques and principles in language teaching*. Oxford: Oxford University Press.
- Law, B., & Eckes, M. (1990). *More than just surviving: ESL for every classroom teacher*. Winnipeg, Man.: Peguis.
- Lebo, H. (2003). The UCLA Internet report: Surveying the digital future, year three. Los Angeles: UCLA Center for Communication Policy. Retrieved January 4, 2005 from <http://www.ccp.ucla.edu/pdf/UCLA-Internet-Report-Year-Three.pdf>
- Lemke, J. L. (1998). Metamedia Literacy: Transforming Meanings and Media. In D. Reinking, M.C. McKenna, L. D. Labbo, & R.D. Kieffer (Eds.), *Handbook of literacy and technology: Transformations in a post-typographic world* (pp. 283-301). Mahwah, NJ: Erlbaum.
- Lee, C.D., & Smagorinsky, P. (Eds.). (2000). *Vygotskian Perspectives on Literacy Research: Constructing Meaning through Collaborative Inquiry*. New York: Cambridge University Press.
- Lenhart, A., Simon, M. & Graziano, M. (2001). The Internet and education: Findings of the Pew Internet & American life project. Retrieved December 13, 2004 from <http://www.pewinternet.org/reports/toc.asp?Report=39>
- LePage, R. B. (1986). Acts of Identity, *English Today*, vol 8.
- Leu, D.J., Jr. (1997). Caity's question: Literacy as deixis on the Internet. *The Reading Teacher*, 51, 62-67.
- Leu, D.J., Jr. (2000). Literacy and technology: Deictic consequences for literacy education in an information age. In M.L. Kamil, P.B. Mosenthal, P.S. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. 3, pp. 743-770). Mahwah, NJ: Erlbaum.
- Leu, D.J., Jr., & Ataya, R. (2002, December). *Assessing assessment strategies among the 50 states: Evaluating the literacies of our past or the literacies of our future?* Paper presented at the annual meeting of the National Reading Conference, Miami, FL.
- Leu, D.J. Jr., Coiro, J., Knobel, M. & Lankshear, C. (in preparation). *Handbook of Research on New Literacies*. Mahwah, NJ: Erlbaum.
- Leu, D.J., Jr., & Karchmer, R., & Leu, D.D. (1999). The Miss Rumphius effect: Envisionments for literacy and learning that transform the Internet. *The Reading Teacher*, 52, 636-642.
- Leu, D.J., Jr., & Kinzer, C.K. (2000). The convergence of literacy instruction and networked technologies for information and communication. *Reading Research Quarterly*, 35, 108-127.
- Leu, D.J., Jr., Kinzer, C.K., Coiro, J., Cammack, D. (2004). Toward a theory of new literacies emerging from the Internet and other information and communication technologies. In R.B. Ruddell & N. Unrau (Eds.), *Theoretical models and processes of reading, fifth edition* (1568-1611). Newark, DE: International Reading Association.

- Leu, D.J., Jr., Leu, D.D., & Coiro, J. (2004). *Teaching with the Internet* (fourth edition).
- Markham, A. (1998). *Life online*. Walnut Creek, CA: AltaMira Press.
- Mayer, R.E. (1997). Multimedia learning: Are we asking the right questions? *Educational Psychologist*, 32, 1-19.
- Mayer, R.E. (2001). *Multimedia learning*. Cambridge, UK: Cambridge University Press.
- Moll, L.C. (1992). Bilingual classroom studies and community analysis: Some recent trends. *Educational Researcher*, 21 (8), 20-24.
- Moll, L. (1998). Turning to the World: Bilingual Schooling, Literacy, and the Cultural Mediation of Thinking. *National Reading Conference Yearbook*, 47, 59-75.
- Murphy, S.M. (1986). Children's comprehension of deictic categories in oral and written language. *Reading Research Quarterly*, 21, 118-131.
- National Center for Education Statistics. (2003). *Internet access in public schools and classrooms: 1994-2002*. Retrieved December 15, 2003, from <http://nces.ed.gov/surveys/frss/publications/2004011>
- New London Group, The. (2000). A pedagogy of multiliteracies: Designing social futures. In B. Cope & M. Kalantzis (Eds.), *Multiliteracies: Literacy learning and the design of social futures* (pp. 9-38). London: Routledge.
- Oakes, J., & Guiton, G. (1995). Matchmaking: The dynamics of high school tracking decisions. *American Educational Research Journal*, 32(1), 3-33.
- Peal, E. & Lambert, W. E. (1962). The relationship of bilingualism to intelligence. *Psychological Monographs*, 76 (27), 1-23.
- Peregoy, S., & Boyle, O. (1993). *Reading, writing, and learning in ESL: A resource book for teachers*. White Plains, NY: Longman.
- Piaget, J. & Inhelder, B. (1969). *The Psychology of the Child*. NY: Basic Books.
- Piaget, J. & Inhelder, B. (1973). *Memory and intelligence*. NY: Basic Books.
- Raphael, T. E., Florio-Ruane, S. & George, M. (2001). Book club *plus*: A conceptual framework to organize literacy instruction. *Language Arts*, Vol. 79, No. 2, pp. 159-168.
- Roberts, C. (1994). Transferring literacy skills from L1 to L2: From theory to practice, *The Journal of Educational Issues of Language Minority Students*, 13 ,pp. 209-221.
- Rosenblatt, L. (1938/1976). *Literature as exploration*. New York: Modern Language Association.
- Russell, M. & Plati, T. (2000). Mode of Administration Effects on MCAS Composition Performance for Grades Four, Eight and Ten. A report submitted to the Massachusetts Department of Education by the National Board on Educational Testing and Public Policy. Retrieved December 12, 2003 from <http://www.nbetpp.bc.edu/statements/ws052200.pdf>
- Skutnabb-Kangas, T. and Toukomaa, P. (1976). *Teaching migrant children's mother tongue and learning the language of the host country in the context of the sociocultural situation of the migrant family*. Helsinki: The Finnish National Commission for UNESCO.
- Snow, C. (1992). Perspectives on second-language development: Implications for bilingual

- education. *Educational Researcher*, 21 (2), 16-19.
- Street, B. (2003). What's new in new literacy studies. *Current issues in comparative education*, 5(2), 1-14.
- Thomas, A. (forthcoming). *e-selves | e-literacies | e-worlds: Children's literacies and identities in virtual communities*. New York, NY: Peter Lang.
- U.S. Department of Commerce: National Telecommunications and Information Administration. (2002). A nation online: How Americans are expanding their use of the Internet. Washington, DC: U.S. Department of Commerce.
- Vásquez, O.A. (2003). La Clase Mágica: Imagining optimal possibilities in a bilingual community of learners. Mahwah, NJ: Lawrence Erlbaum Associates.
- Vásquez, O.A. (1994). The magic of la clase mágica: Enhancing the learning potential of bilingual children. *The Australian Journal of Language and Literacy*, 17(2), 120-128.
- Vásquez, O.A. and Duran, R. (2000) La clase mágica and club proteo: Multiple literacies in new community institutions. In M. Gallego and S. Hollingsworth (Eds.), *What counts as literacy: Challenging the school standard*. New York: Teachers College Press.
- Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT Press.
- Vygotsky, L.S. (1978). *Mind in society*. Edited by Cole, M., John-Steiner, V. Scribner, S. & Soubermann, E. Cambridge, MA: Harvard University Press.
- Wong-Fillmore, L. (1998). *Keeping Pedagogy in and politics out of our ESL classrooms*. Paper presented at the meeting of Indiana Teachers of English to Speakers of Other Languages, Indianapolis, IN.
- Wong-Fillmore, L. (1991). When learning a second language means losing the first. *Early Childhood Research Quarterly*, 6(3), 323-346.

APPENDIX A

MULTILINGUAL PRINCIPLES

1. Language is Linked to Identity Construction

Language is linked to identity construction and plays an important role in developing self-concept (Baker, 2001). Promoting students' home languages in and out of the classroom provides a foundation for building a stronger sense of self. Expressing language draws speakers closer together. In a sociocultural sense, language is a way to teach children how to be viable members of a cultural community. Reciprocal linguistic forms are used to demonstrate and create solidarity, as well as express intimacy and familiarity.

Children's ability to retain their home language is essential to maintaining strong social and emotional ties to their parents, grandparents, extended family members, and communities. Language provides a context by which speakers align themselves with cultural and social roles. Socialization and language exchange transmits the culture of the community. As children learn their native language, they absorb the social structure of the culture. In this way, language learning becomes a means of sorting out one's identity in varying social environments.

2. Language and Literacy Develop Globally, not Linearly, Through Opportunities to Use Language in Meaningful Contexts

In contrast to language learning in formal instructional settings, language acquisition is optimized within more natural contexts and does not follow a prescribed scope and sequence. When acquisition is viewed through this lens, language develops through supportive exchanges between and among speakers with meaningful communication as the goal. Vocabulary and grammar provide support for creative expressions of ideas and points of view in a mutually intelligible context. Activities that promote authentic communication and involve real-world tasks support language learning (Edelsky, Altwerger, & Flores, 1991). Learners who are engaged in problem solving are motivated to use language for authentic purposes. Risk-free environments where students' background, experiences and contributions are validated facilitate language learning (Law & Eckes, 1990).

While language acquisition is a natural process, the development of cognitive/academic language requires time, typically 4 to 7 years of formal instruction (Cummins, 1981, 1984, 2000; Hakuta & D'Andrea, 1992; Hakuta, Butler, & Witt, 2000). Formal instruction that draws from students' home language background is beneficial and supportive of making content connections across languages. Cognitive and academic language skills readily transfer from one language to another (Cummins, 1981). Thus, an important aspect of a multicultural perspective is that connections between both home and academic settings are essential to promote the full development of one's potential.

3. Multilingual Learning Contexts Help Students Understand the Universals Common to all Languages, Promoting Cognitive Flexibility

Multilingual learning contexts help students understand the universals common to all languages, promoting cognitive flexibility. Children learn second languages in different ways depending upon their native language, age, culture, motivation, individual personalities, and the context of acquisition. Learning new languages provides opportunities for increased metalinguistic awareness. Metalinguistic awareness can be seen as the ability to think about and

reflect upon the nature and functions of languages, including analyses of how languages are similar and different. Such metalinguistic awareness is thought to be a key factor in the development of reading in young children (Donaldson, 1978; Bialystok, 1997), hinting that bilinguals may be ready to learn to read slightly earlier than monolinguals.

Multilingual and multicultural learning broadens students' worldview and encourages multiple lenses in problem solving and thinking. As students learn to reason, justify and critique ideas that come from many points of view, they formulate more developed, solutions to problems. In order to formulate creative and innovative solutions, a variety of perspectives must be considered. Multilingual/multicultural teaching provides access to multiple perspectives that reflect a wide array of ideas (Gort, 2003). Bridging across cultural and linguistic contexts enables students to identify richer, more complex, and ultimately more beneficial, solutions to complex problems.

4. Language Competence is Evolving and Dynamic

The extent to which languages are used affects development, motivation, and proficiency levels. Language ability involves the flexibility to operate and negotiate between contexts and settings. Expressions of language are constantly changing based on speakers' communicative purposes as defined by the relationships between speakers. Affiliations and discourse patterns continuously change based on context and comfort level. According to LePage (1986), people "create their linguistic systems so as to resemble those of the groups with which from time to time they wish to identify" (p. 23). Each of us participates in several different speech communities that change according to time, place, and situation. For example, Mexican-Americans in the United States occupy a place in two cultures and two linguistic groups, speakers of Spanish and speakers of English. For some, becoming English-dominant means denying the Mexican heritage that is part of their group identity. As a result, they participate in both speech communities and switch flexibly back and forth based on context and purpose according to the nature of the communications and with whom and to whom they are speaking. Exchanges involve not only knowing how to speak a specific language, but also how to use language appropriately in a variety of social situations. Through meaningful opportunities to use and express language, speakers develop a working knowledge of all the possible linguistic forms and learn to understand the reasons for choosing each one to suit their communicative purposes. A multilingual perspective acknowledges that individuals identify with multiple linguistic and cultural communities and that association with one does not minimize or limit membership in another.

5. Multilingual Development Supports Critical Thinking

Literacy can work to maintain the status quo, that is, to ensure that those in power influence what the general population reads and thinks. Yet, literacy can also be a liberator, a bar to opportunity, or a means of opening a door to empowerment (Baker, 2001). A multilingual perspective recognizes that all students benefit from learning to be critical of what they read, hear and encounter in a variety of settings, especially because perspectives embedded in reading materials and the media can be hegemonic, culturally biased, and unreliable. A multilingual perspective involves developing multiple cultural frames of reference for recognizing and responding to bias, domination, and inequality in order to respond critically through interpretation, evaluation, and reflection. Stereotypes are combated and multiple viewpoints encouraged when students and teachers jointly and interactively construct knowledge, develop

consciousness, and share ideas, reflections, experiences, and reactions through critical inquiry.

6. Traditional Teacher Roles and Student Roles Transform in Language Rich Classroom Contexts

As students share ideas, ask questions, and exchange information, they actively construct meaning. Constructivist perspectives in learning involve setting up environments where students can work together to solve problems through group-based, cooperative learning activities (Vygotsky, 1978). When implemented in the classroom, communication shifts from teacher talk to student talk. Teachers become facilitators of their students' learning, making the exchange of ideas an integral part of the learning process. According to Freire (1993) teachers "must abandon the educational goal of deposit-making and replace it with the posing of the problems of human beings in their relations with the world. Liberating education, or education as the practice of freedom, consists in acts of cognition, not transferals of information" (p. 60). Educational dialogues incorporating exchanges between and among students are catalysts for cooperation in ways that transform the classroom and the world. Through active participation, students may find that they gain confidence, becoming more responsible managers of their own learning (Larsen-Freeman, 1986).

7. Power Relations Play a Critical Role in Social Interactions Between Language Learners and Target Language Speakers

Bilingualism has become a fact of life in the United States as immigration has reached its highest level in U.S. history (Crawford, 2004). Unfortunately, monolingual attitudes remain the norm in most schools as educational settings overwhelmingly promote subtractive bilingualism. Many schools are learning contexts structured toward the goal of assimilation to the dominant language, English, with no objectives for maintenance or extension of students' first language. Wong-Fillmore (1998) has documented the fact that children lose their mother tongue at a far higher rate than they learn their second language. This phenomenon, she further explains, is one in which "learning a second language means losing the first one" (Wong-Fillmore, 1991, p. 341). In fact, the most recent waves of immigrants experience substantial attrition of their native language by the second generation in the United States (Crawford, 2004). Communities sell themselves short when operating within a monolingual framework. A multilingual perspective acknowledges and promotes the many benefits of bilingualism and multilingualism, encompassing communicative, cognitive, and cultural advantages. This perspective also promotes and supports individual language rights. Children and adults alike deserve the right to preserve and extend their linguistic competencies by exercising their right to speak their languages across contexts in order to broaden and deepen their communicative competences.

Communication that takes place on equal footing allows for respectful interchanges. Vygotsky (1978) defines the zone of proximal development as accounting for these interchanges and encourages "a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers" (p. 90). Body language, physical proximity and tone of voice can communicate subtle messages about power relationships.

8. Oral Language Can be Used as a Tool for Developing Student Literacy

Language is used for many purposes including communication, expression of values, sharing of oral traditions and family life. It is a powerful expression of the way individuals

situate themselves in relationship or relation to others. Exchanging ideas from a common cultural background facilitates language use in new and meaningful ways. As literacy develops, students learn to connect their shared oral traditions with the language used in books. Using the spoken form of language through experiences with listening and speaking can serve as a bridge to the mastery of the more standard forms. Children need encouragement to experiment with a variety of linguistic forms in order to develop fluency across settings. Drawing upon students home background and native language demonstrates acknowledgement of the important role personal experience plays in making connections between known concepts and new ideas. Moll (1992) encourages teachers to provide "authentic literacy practices" (p. 21), to use literacy as a tool for "inquiry, communication, and thinking" (p. 21) and to extend ways for students to read and interpret information across content areas. Providing students with opportunities to think, reflect, and respond multilingually promotes growth in their ability to use language effectively.

9. Social Networks of Exchange are Powerful Learning Agents

Communities that coalesce around common interests provide opportunities to build affiliation, deepen cultural attachments and expand linguistic expression. Social networks are particularly powerful for elementary aged children because learning is fundamentally intertwined with friendship and socialization. Learning becomes more meaningful, engaging and motivational when ideas can be shared among networks of people with whom students have created an affinity. Families represent the most important social network for learning among students in elementary grades. When families become actively involved in educational experiences, learning is connected across contexts. Moll (1992, 1998) discusses the value of involving the community, including parents, as resources. Once uncovered and mobilized for learning, social networks become an important intellectual resource for school.

10. Reading and Writing are Literacy Processes Through Which Children Create and Express Meaningful Ideas in any Language

Literacy development draws on students' vocabulary knowledge, oral language, and a variety of strategies to promote and regulate comprehension (Peregoy & Boyle, 1993). Prior knowledge plays a particularly useful role in the development of literacy considering that individuals develop literacy skills most easily in a familiar language. Research shows the value of strong native language and literacy on the development of literacy in the second language, even when languages have dissimilar writing systems (Cummins, 1991). Further, high levels of native language proficiency strongly correlate with high levels of academic achievement and linguistic proficiency in a second language (Skutnabb-Kangas & Toukomaa, 1976). Since multilingual students function in at least two cultures and languages, their success requires literacy in more than one language. In order to promote the transfer of literacy skills from one language to another, learning environments should promote the examination of relationships between languages (Roberts, 1994). Providing space and freedom for students to express their ideas in the language they feel most comfortable suits several instructional purposes: showing respect for individuality, respecting cultural connections, and promoting linguistic transfer.

APPENDIX B

NEW LITERACIES PRINCIPLES

1. The Internet and other ICTs are Central Technologies for Literacy Within a Global Community in an Information Age

Literacy has always been shaped by the dominant technologies of every historical period. Cuneiform tablets, papyrus scrolls, velum transcriptions, and printed paper have each demanded their own reading (and writing) skills to fully exploit the information potential of each technology. Today, we are moving from a period in which printed book technologies have dominated our literacy landscape to one where the Internet and other ICTs are central to literacy development in a global community. Consider, for example, just a few indications of this in workplace settings, at home, and in schools.

In the workplace, survey data from the United States indicates that in just one year (August 2000 to September 2001), use of the Internet at work among all employed adults, 25 years of age and older, increased by nearly 60%, from 26.1% of the workforce to 41.7% (U.S. Department of Commerce, 2002). If this rate of increase continues, nearly everyone in the workforce will be using the Internet at work within just a few years.

Statistics on Internet usage at home in the United States parallel these changes in the workplace. Nearly 60% of all households reported that they had Internet access in 2002; the percentage today is close to 75% (Lebo, 2003). Moreover, the percentage of U.S. households with broadband Internet access has been doubling each year from 1998 to 2001, an adoption rate in households exceeding that of any previous technology including telephones, color televisions, videocassette recorders, cellular phones, and pagers (U.S. Department of Commerce, 2002).

The Internet also is appearing in school classrooms in the United States and other countries at a rate that parallels its appearance in the workplace and at home. In only eight years (1994–2002), the percentage of classrooms in the United States possessing at least one computer with Internet access has gone from 3% to 92% (National Center for Education Statistics, 2003). The availability of Internet access has had a demonstrated impact on students. In 2001, 94% of children aged 12–17 who had Internet access said that they used the Internet for school-related research (Lenhart, Simon, & Graziano, 2001). Clearly, the Internet has become a central technology for information and communication today.

2. The Internet and Other ICTs Require New Literacies to Fully Access Their Potential

New literacy skills and strategies are essential to effectively use the Internet and other ICTs. For example, reading comprehension in online environments is more complex and requires new skills and strategies to be successful (Coiro, 2003). It is necessary to search for information with search engines that require new reading skills to effectively sort through a lengthy set of results. It is also necessary to make inferences about hyperlinks, determine the appropriateness of information, understand and manipulate multiple media formats, and sort through the vast amount of information available with the click of a button that does not exist in static, print-based texts. Locating information, with a search engine, evaluating the accuracy of information you locate, synthesizing disparate information sources, participating in online discussions, communicating with email are all important new literacies to be acquired. On the Internet, reading, writing, and communicating take on new forms as information is presented in more

complex networks and new media formats that require the development of new literacies to use them effectively.

3. New Literacies are Deictic

The term *deixis* (dike-sis) is used by linguists and others (Fillmore, 1972; Murphy, 1986) for words whose meanings change quickly depending upon the time or space in which they are used. Leu (1997, 2000) and Leu and Kinzer (2000) have argued that literacy has become a deictic term; the forms and functions of literacy rapidly change as technologies for information and communication change, requiring new skills and strategies for their effective use. This has important consequences for any discussion of literacy in the 21st century. New literacies are continuously new literacies. Increasingly, the task of literacy learners will be to learn how to learn, not to simply master a fixed set of skills that remain static. (Leu, 2000; Leu et al, 2004)

4. The Relationship Between Technology and Literacy is Transactional

New technologies transform literacy but literacy also transforms new technologies. Increasingly, this happens when students or educators construct new curricular resources with Internet technologies (Leu, Karchmer, & Leu, 1999). Thus, we must begin to recognize the relationship between technology and literacy as a transactional one. Because this relationship is transactional, new literacy and learning tools continually appear, providing important new resources for learners that require even newer literacies to use them effectively.

5. New Literacies are Multiple in Nature

New literacies not only change on a regular basis, they are also multiple in nature. These multiliteracies (The New London Group, 2000) are both open-ended and flexible, and are necessary to function in diverse contexts and communities. While the notion of multiliteracies was traditionally conceived of within a more traditional framing of language, the Internet has spawned multiple technological contexts that are now a part of our every day lives. The ability to share information globally through the Internet introduces new challenges for students expected to interact in different social and cultural contexts.

6. Critical Literacies are Central to the New Literacies

New literacies demand new forms of critical literacy, critical thinking, and analysis as information is encountered through the use of the Internet and other ICTs. Since open networks, such as the Internet, provide a platform for anyone to publish anything without scrutiny, it is essential that students develop critical literacy skills. Although schools often include some critical thinking and analytical skills that focus on separating fact from propaganda, even more complex analysis skills are needed as the Internet plays a more central role in classrooms. A New Literacies Perspective draws from the work of the critical literacy and media literacy communities. It argues that much greater higher-level and critical thinking skills are required in the changing contexts for information and media that are emerging.

7. New Forms of Strategic Knowledge are Central to the New Literacies

New technologies require new skills and strategies to use them in effective ways. Each technology presents different contexts and resources to construct meaning and require different strategies to do this successfully (Mayer, 1997). New literacies are defined by the strategic knowledge that is central to the use of information in rich, complex networked environments. Among the types of strategic knowledge important to new literacies are the ability to locate,

evaluate, and effectively use the resources available on the Internet and other ICTs. Since the amount of available resources are staggering and continually increasing, new forms of strategic knowledge will continue to be central to developing new literacies.

8. Speed Counts in Important Ways Within the New Literacies

Because of the vast amount of information available through the Internet, the new literacies will be defined by the rate at which one can read, write, and communicate. Additionally, the rate in which one can acquire, evaluate, and use information to solve problems is central to success. Thus the acquisition of these skills is an important instructional issue to consider. Since speed is a central issue in developing new literacy skills and strategies, the gap between highly literate and literacy challenged students is also an issue that needs to be addressed to prevent a widening gap of inequity. Students who have difficulty with reading tasks and read haltingly will be left further and further behind compared to their peers who have the ability to quickly skim web pages and sift through large amounts of information in a short time. Substantial resources need to be devoted to addressing this issue to prevent an ever-widening gap among same aged learners.

9. Learning Often is Socially Constructed Within New Literacies

Two aspects of social learning strategies are important to recognize in a New Literacies Perspective. First, social learning plays an important role in exchanging new skills and strategies needed to successfully interact with new technologies. Many of today's students possess new literacy skills that their teachers have not yet acquired. Therefore, the more traditional instructional model for literacy focused on an adult who teaches a skill to a group of students is no longer practical. It is nearly impossible for one individual to possess all the new literacies needed for learning with the Internet and other ICTs. However, each individual will know something unique, distinct, and useful to others that can be easily shared in a social learning context. Secondly, social learning is not only important for how information is learned but also for how information is constructed. Much of the information on the Internet is constructed through social knowledge of various individuals. For example, telecollaborative projects and threaded discussions are collections of information provided by multiple participants from diverse backgrounds. Therefore, the new technologies of literacy provide opportunities for collaboratively constructed solutions to important problems drawn from many different contributors. Thus, technology provides an opportunity for increased collaboration across learning contexts and has the ability to draw us closer to others from different cultures.

10. Teachers Become More Important, Though Their Role Changes, Within New Literacy Classrooms

Teachers will be challenged to orchestrate learning experiences and guide students' learning within the complex environments of the Internet and other ICTs. It will be important for them to provide increasingly richer and more complex opportunities for themselves and their students as technologies continue to change and new literacies continue to emerge. Instead of acting as a dispenser of literacy skills, since at times their students will possess skills that they have not yet acquired, teachers will need to orchestrate more complex contexts for literacy learning and development. At times, roles between student and teacher may become reversed as students who possess new literacies become the expert in the classroom and share their expertise with others, including the teacher. Students who have teachers that understand the complexities of a New Literacies Perspective will be advantaged over those who do not. Since this is the case,

teacher education and professional development needs to provide more opportunities to explore the complexities of new literacies in literacy instruction.

Principles	<u>Out-of-school</u>				<u>In-School</u>		<u>Combined</u>	
	Fifth Dimension	La Clase Magica	D.U.S.T.Y	Project Registry Sites	Bucket Buddies	International Schools CyberFair	Kidlink: KidProj	Kidlink: KidForum
5. Recognizes the crucial role of social construction and collaboration in language and literacy development	✓	✓	✓	✓		✓	✓	✓
6. Recognizes that new forms of literacy and language will regularly emerge								
7. Promotes an awareness and application of critical literacies (e.g., evaluation of assumptions inherent in the information accessed and exchanged)		✓				✓	✓	
8. Recognizes the important relationship between home and school environments	✓	✓	✓					

Principles	<u>Out-of-school</u>			<u>In-School</u>			<u>Combined</u>	
	Fifth Dimension	La Clase Magica	D.U.S.T.Y	Project Registry Sites	Bucket Buddies	International Schools CyberFair	Kidlink: KidProj	Kidlink: KidForum
9. Promotes extensive experiences with information texts instead of only narratives	✓	✓		✓		✓	✓	✓
10. Integrates language and literacy learning into authentic social action projects on a global level				✓		✓	✓	✓