

FEATURE ARTICLES



The New Literacies of Online Reading Comprehension

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“How will I ever find the time?” It is a common refrain. As the Internet enters our classrooms, it requires each of us to become more proficient with the new literacies of online reading comprehension and to develop new instructional strategies as well. The Internet, after all, is a reading issue, not a technology issue.

We all face school schedules that are often stretched to the breaking point. Few of us have the time to think about taking on something new, and certainly not something as large as developing the new reading comprehension skills required on the Internet or learning how to teach these. We understand. And yet, to fully prepare our students for the new literacies of the Internet means that each one of us needs to think in new ways about reading and language arts instruction. Our students and their literacy futures will require change from all of us.

This article seeks to support you on this journey. We begin by explaining a central issue: The Internet is this generation's defining technology for reading, writing and communication. Then, we will present research evidence to demonstrate that the Internet requires new online reading comprehension skills and strategies. Next, we will discuss how current public policies and assessment instruments actually limit instruction in new literacies for those students who need our support the most, those in the more economically challenged districts of our nation. Finally, we will share a number of easy steps to help you to integrate the Internet into your own classroom in thoughtful ways, preparing all students for the new literacies that will define their future.

The Internet Is This Generation's Defining Technology for Literacy and Learning

In less than a generation, much of our information has

moved from page to screen. In 2002 alone, new digital information appeared on the Internet that was equivalent to the books in 37,000 new Libraries of Congress (Lyman & Varian, 2003). For some, especially our youth, reading on the Internet is as common as reading a book and, for others, more so.

Consider the changes taking place to reading around the world:

- In 2005, over one billion people, one sixth of the world's population, were reading on the Internet. Most of this growth took place in the past five years (de Argaez, 2006; Internet World Stats: Usage and Population Statistics, n.d.). At this rate, nearly half of the world's population will be reading online in just five more years.
- In Accra, Ghana, 66% of 15-18 year olds attending school, and 54% of 15-18 year olds not attending school, report having gone online previously (Borzekowski, Fobil, & Asante, 2006).
- In Japan, 98% of households have access to extremely high speed bandwidth, 16 times faster than that found in the U.S., at a cost of \$22 per month (Bleha, 2005).
- In the U.K, 74% of children and young people aged nine to nineteen have access to the Internet at home (Livingstone & Bober, 2005).
- In 2004, nearly 75% of all households in the U.S. had Internet access (Neilson/Net Ratings, 2004).
- Eighty-seven percent of all students between the ages of 12 and 17 in the U.S. report using the Internet; nearly 11,000,000 do so daily (Pew Internet & American Life Project, 2005).
- More than 70% of students between the ages of 12 and 17, with home access to the Internet, report using the Internet as the primary source

for information on their most recent school report or project (Pew Internet & American Life Project, 2001).

It is clear that the Internet has become a vital new dimension of reading comprehension. Nations around the world understand this and many are much farther along than the U.S. in establishing public policies to prepare their students for the new reading and writing demands of the twenty-first century (Bleha, 2005; Friedman, 2005). Students in many nations are being prepared for the reading comprehension demands of workplaces in a globalized, information economy, often more thoroughly than we have considered preparing students in our own nation (Leu, 2006).

The Internet Requires New Skills and Strategies for Online Reading Comprehension

We tend to assume that reading on the Internet is the same as reading a book, magazine, or other offline print material; it is not. Reading online is quite different (Leu, Zawilinski, Castek, Banerjee, Housland, Liu, & O'Neil, in press).

How is online reading comprehension different? With others from around the world (see Coiro, Knobel, Lankshear, & Leu, in press), those of us at the New Literacies Research Lab at the University of Connecticut study this issue. One study, among highly proficient six grade students (Coiro & Dobler, in press), found that online reading comprehension shared a number of similarities with offline reading comprehension but that online reading comprehension also included a number of important differences that make it more complex. A second study (Leu, Castek, Hartman, Coiro, Henry, Kulikowich, & Lyver, 2005), found no significant correlation, among seventh grade students, between online reading comprehension and the Connecticut Mastery Tests in Reading (Connecticut State Department of Education, 2001). These results also suggest that new skills and strategies may be required during online reading. Finally, it appears that low performing offline readers are not necessarily low performing online readers. A 7th grade student who had been formally identified as learning disabled in reading, received the lowest score on the state reading assessment in his class while also obtaining one of the highest online reading comprehension test scores (see Leu, et. al. in press). To view the video of this student's online reading, please visit <http://www.newliteracies.uconn.edu/reading.html>. You will also find the score sheet for this reader if you would like to review an example of how we evaluate online reading comprehension.

All of these studies have helped us to develop a preliminary model of online reading comprehension (Leu, Kinzer, Coiro, & Cammack, 2004), which identifies the new reading comprehension skills and strategies required during online reading. These new literacies of online reading comprehension tend to be organized within

traditional areas, but become transformed in important ways during the five phases of the online reading comprehension process.

What does online reading comprehension look like? Reading online always begins with a question or an information problem to solve. Because information is so vast online, it requires new reading skills to locate the specific information that you require. And, because anyone may publish anything online, it also requires additional new reading skills to critically evaluate the information that you locate. We also read and synthesize information in new ways online. In fact, we actually construct the texts that we read by the links we follow in our quest. And finally, online reading nearly always takes place while we are also composing messages: email, IM, blogs, discussion boards, and much more. Thus, online reading comprehension also involves written communication.

In short, online reading comprehension processing includes five major functions.

1. developing important questions;
2. locating information;
3. critically analyzing information;
4. synthesizing information; and
5. communicating information.

In other work (Leu, et. al, in press), we describe more fully the new reading skills and strategies required in each area. And a current research grant (Leu & Reinking, 2005) is permitting us to develop a more detailed lens into the skills that more proficient seventh graders report during online reading with think aloud protocols. Moreover, other work is also taking place in our lab to more precisely define the details of online reading comprehension. Here, we will simply use a single area, critically analyzing information, to illustrate how new reading comprehension skills and strategies are required online. We are finding, for example, that very few students realize that they need to be "healthy skeptics" while reading online, always checking first to see who created the information at a new web site they encounter so that they might know something about how information is being "shaped" by that person's perspective.

In Figure 1, for example, we show an item being used in a study conducted by Laurie Henry (2006). For this item about the Martin Luther King Holiday, the correct answer is D. Readers should first click on the small print text, at the bottom of the page, that says, "Hosted by Stormfront." This is the only clue about the group who created this information. If you select this link, you will discover that Stormfront is a White Supremacist organization with twisted views about Martin Luther King. Yet few students ever evaluate the nature of the information that they read online, a skill that is essential to online reading comprehension. In fact, 96% of all high performing online readers at the seventh grade reported that the bogus site *Save The Pacific Northwest Tree Octopus* (see <http://zapatopi.net/treeoctopus/>) provided



Figure 1

An assessment item that measures one aspect of online reading comprehension: knowing to always check the source of information when you first visit an Internet site. (From Henry, 2006.)

reliable information and should be used in a web page about endangered animals. Clearly, critical evaluation of information is an online reading comprehension skill that takes on new forms and importance on the Internet. Many other new literacies of online reading comprehension are also required in each of the other areas of the online reading comprehension process listed above.

As A Nation We Have Done Little to Prepare Our Youth for Reading on the Internet

It is increasingly clear that the Internet is an important new context for reading, writing, and communication. It is also clear that new reading skills are required on the Internet. Unfortunately, assessments of reading in the U.S. have not kept up with the reading skills the Internet requires. Not a single state reading assessment, used for No Child Left Behind assessments (No Child Left Behind Act of 2001, 2002), measures our students' ability to: read search engine results; read online to locate information; critically evaluate information on the Internet; synthesize information online; or read and compose an email message (Leu, 2006, Leu, Ataya, & Coiro, 2002). Our nation will have to change the nature of our assessment practices before we can fully understand the nature of the challenges that we face with reading in an online age.

Because of traditionally low patterns of reading performance, poor urban and rural school districts face enormous pressure to achieve adequate yearly progress on these assessments of print-based reading skills that have nothing to do with online reading comprehension but are required by No Child Left Behind legislation (No Child Left Behind Act of 2001, 2002). As a result, schools most at risk must focus complete attention on the instruction of more traditional reading experiences, abandoning any instruction in the skills required for reading and writing

online: asking essential questions, searching for online information, critically evaluating online information, synthesizing online information, or communicating online. These students often have little access to the Internet at home and, at school, receive little opportunity to learn about online reading because reading tests do not measure this. It is the cruelest irony of No Child Left Behind that students who need to be prepared the most at school for an online age of reading, are precisely those who are being prepared the least.

This challenge is not inconsiderable. Eight million U.S. adolescents are considered illiterate (Biancarosa & Snow, 2004). Almost a third of adolescents cannot read at basic levels (National Center for Educational Statistics, [NCES], 2003). Moreover, nearly twice the number of economically privileged students perform above the basic level as their economically disadvantaged peers, those with the least Internet access at home (NCES, 2003).

With the new reading skills that the Internet requires, this reading achievement gap will only get larger as online reading experiences become more central to our literacy worlds. In the end, we appear to spend, know, and do little to help readers in poor urban and rural school districts to read online and learn effectively in an age of global communication and online information.

What Can We Do?

There are a number of steps each of us can take to begin our journeys with the integration of the Internet into our classrooms. We share the best ideas that we know to help you on your journey.

Borrow Good Ideas from the Many Teachers Who Have Exceptional Classroom Home Pages

Good teachers borrow good ideas from other teachers. The Internet makes this easy to do. Many pioneering teachers

have an online classroom home page where they place links to all of the exceptional resources they have found for students at their grade level. They use these resources, on a daily basis, in their classrooms. You can borrow these classroom-tested materials that are written at a level appropriate for each grade. To find these teachers, the following key words can be used with nearly any search engine such as Google (www.google.com): *classroom homepage fourth grade*. If you review the results from this search, you will find many classroom home pages with new ideas and resources you can use in your own classroom. See Figure 2 for some of our favorites at the elementary grade levels. If you visit a site and use something you find there, remember to send the teachers an email thank you note. Everyone appreciates these thoughtful notes.

Figure 2
The classroom home pages of exceptional teachers where you can find many good ideas to use with your own students.

Kindergarten: Mr. Fontanella in Juneau, Alaska
<http://www.jsd.k12.ak.us/hbv/classrooms/Fontanella/fontanejhbvHomek.html>

First Grade: Mrs. McGowan in Spring Lake, New Jersey
<http://www.mrsmcgowan.com/>

Second Grade: Mrs. Hicks in Cape Girardeau, Missouri
<http://www.cape.k12.mo.us/blanchard/hicks/index.html>

Third Grade: Mrs. Newingham's Third Grade
<http://hill.troy.k12.mi.us/staff/bnewingham/myweb3/>

Fourth grade: Mrs. Renz in Redmond, Oregon
<http://www.redmond.k12.or.us/mccall/renz/>

Fifth Grade: Mrs. Bogucki in Stafford, Virginia
<http://www.mrsbogucki.com/aemes/homepage.htm>

Sixth Grade: Mrs. Malkowski in Eden, New York
<http://www.mrsm.addr.com>

View Online Videos of New Literacies in the Classroom
Sometimes it helps to see others engaged in classroom instruction or hear others talk about the issues. If you wish to view online videos about new literacies instruction, two resources are available for you:

- **Teaching Reading 3-5** contains a free professional development unit on New Literacies Instruction. This is a series produced by WGBH and funded by the Annenberg Foundation to support professional development efforts in schools. The video and other materials are available at: <http://www.learner.org/>

channel/workshops/teachreading35/session5/index.html

- **New Literacies in the Classroom** is a series of lectures on integrating the new literacies of online reading into your classroom. The many video segments, along with articles from Reading Teacher, are available at: http://ctell.uconn.edu/canter/canter_video.cfm

Use Starfall

If your students are just beginning their reading journey, in grades K-3, or if you have struggling readers, you should be certain to incorporate **Starfall** into your computer center activities each day. **Starfall** focuses on traditional early reading skills, but the online experiences provide a nice introduction to the new literacies of online reading. **Starfall** contains, in our opinion, some of the finest early reading software experiences for beginning readers. It is a gift to all teachers of reading from the founder of the Blue Mountain Greeting Card company. He struggled with reading as a student and wanted to give back to the teachers who helped him and who help all students struggling with the acquisition of reading skills.

Use ReadWriteThink

ReadWriteThink, (<http://www.readwritethink.org>), is a site sponsored by the International Reading Association and the National Council of Teachers of English, with support from Verizon. This site provides a number of web resources, lessons, and planning tools for teachers of literacy. Lessons are searchable by grade band, literacy standard, or literacy engagement (Learning Language, Learning about Language or Learning through Language). The web resources and lessons posted are reviewed by an expert review panel. One example found in the grade six to eight band "engages students in a study of social injustice using the Holocaust, the Trail of Tears, and the Japanese/American Internment during World War II. Students debate and discuss their responses to assigned readings." Lessons span the content areas and provide ideas for literacy instruction from phonemic awareness to critical reading. For a comprehensive overview of ReadWriteThink and a list of vocabulary lessons found at the site, see Henry (2007).

Discover the Potential of Internet Workshop

Internet Workshop (Leu, 2002) is a nice instructional model with which to begin integrating the Internet into your classroom. Simply set up your Internet computer as a center activity and each week create one assignment for your students. Set a bookmark to the webpage students may use to complete the assignment and hold a short workshop session at the end of the week to share and discuss the answers students discovered. If you are beginning an author unit on Jan Brett, for example, set a bookmark to Jan Brett's Homepage (<http://www.janbrett.com/>) and

ask students to come to the workshop session with three things they learned about this wonderful author. Perhaps have students record their research findings in an Internet Journal. Then, on Friday, discuss together everything that students learned about this important author, the new reading strategies that they are acquiring, and then develop new questions for the next workshop session.

Discover the Potential of Internet Project

Internet Project (Leu, 2001) is another important instructional model to consider for your classroom. In this model, your class engages in an online project with at least one other classroom in another part of the world, often exchanging messages by email. You might consider, for example, a collaborative email exchange project with one classroom in Australia, Japan, Canada, the UK, and Spain. Each day, for three weeks, you each agree to exchange an email message with all of the other classes, describing what is taking place that day in your classroom. Each morning, your classroom email helper collects all the messages, copies and pastes them into a single document, and then prints out copies for each student on your printer. You read and discuss these messages and then collaboratively construct a reply to send back to all the classes that day. This message is then copied and sent by your email helper. Each day you will discover new ideas about life in other parts of the world and be able to ask students questions to learn more about life in different places. You can connect with classrooms around the world at project registry sites such as:

- Global School House: <http://www.globalschoolnet.org/GSH>
- Oz Projects: <http://www.ozprojects.edna.edu.au>
- Grassroots: <http://www.schoolnet.ca/grassroots>

You may also view several short videos about Internet Project at http://ctell.uconn.edu/canter/canter_video.cfm?movie=3a_introduction.mov. An online article about this model is available at: http://www.readingonline.org/electronic/RT/3-01_column/.

Take Advantage of the Free Resources at Epals.com

At the Epals site, <http://www.epals.com>, numerous free multicultural Internet Projects are posted for interested teachers. Epals.com also offers teachers 35 free student email accounts. Email, being a familiar Internet communication tool for both teachers and students, provides the opportunity for students to practice their writing fluency in a variety of ways. Book clubs, multicultural projects, and content specific exchanges provide authentic purposes and audiences for which students can write and collaborate. Teachers can request collaboration by specifying grade/age, content interest, and preferred communication tools (email, chat, instant messenger, video conferencing, postal mail) or they can join one of the posted projects. A translation tool on the site helps break down the language barrier

between students. The tool offers monolingual students multicultural exchanges with peers speaking Chinese, Japanese, or Portuguese, just to name a few. Anyone can access the translation tool at any time at <http://www.epals.com/translation/translation.e>. Spend a few minutes investigating this worthwhile site. You might decide to use email within your own classroom to extend a class conversation by asking students to respond and “reply to all” so that all students receive all the responses. To sign up for free student accounts, simply go to <http://www.epals.com/> and click the “join us” button for Epals Global Community. Then, follow the simple steps provided.

Teach the Online Comprehension Skills of Critical Evaluation

Our experience is that the critical evaluation of information is often neglected by students reading online; they tend to lack the healthy skepticism that is especially necessary online. A simple way to teach this is to conduct an Internet Workshop assignment each week using one of many “spoo sites” that appear online that are similar to Save The Pacific Northwest Tree Octopus (see <http://zapatopi.net/treeoctopus/>). Many sites like this may be found by simply conducting a search for “spoo sites.” This will help you to find many other spoo sites that can be used for instruction such as:

- Driver’s License Search (<http://www.license.shorturl.com>)
- California’s Velcro Crop Under Challenge (<http://home.inreach.com/kumbach/velcro.html>)
- Male Pregnancy (<http://www.malepregnancy.com>)
- Aluminum Foil Detector Beanie (<http://zapatopi.net/afdb.html>)
- History of a Victorian Era Robot (<http://www.bigredhair.com/boilerplate>)
- Strawberry Pop-Tart Blow-Torches (<http://www.pmichaud.com/toast>)

Simply assign one site each week and invite your students to try to determine if the site provides reliable information or not. Invite them to bring the strategies that they use to determine their answer to share during the workshop session.

Engage Students in Authentic Blog Writing

Students are spending increasing amounts of time out of school on the Internet (Pew Internet & American Life Project, 2005). Recognizing the types of authentic literacy activities our students engage in outside of school can be a conduit for literacy activities within school (Alvermann, Huddleston, & Hagood, 2004; Shaffer & Resnick, 1999). What better way to bridge the gap than by incorporating blogs? Blogs are easily editable text-based webpages whereby posts are arranged chronologically. Experience using email and a word processor is all the prior experience necessary to sign up for and comfortably maintain a

blog with your students. The first step is to visit <http://www.incsb.org/awards/>. At this site, educational blogs that have been voted "the best of" in a variety of categories over the past few years can be explored. Some of the award categories are "Best Group Blog," "Best Individual Blog," "Best Newcomer Blog," and "Best Library Blog." *Duck Diaries* (<http://duckdiaries.edublogs.org/>), for example, was honored with the Edublog Star Award for 2006.

These award winners can give you valuable ideas for incorporating blogs. Teachers, who may feel reluctant to blog with their students because of safety concerns, will be pleased to know that Edublogs.org provides advertising-free, password-protected blogs. You are given complete control over both the audience viewing the posts as well as the contributions. A simple way you could begin using blogs would be to post a thought prompt about a topic and ask students to respond to that prompt through the comments feature on your blog. Fueled by new ideas from the award winners, a greater sense of security about student safety, and a simple activity to begin, you can sign up for a blog at Edublogs <http://edublogs.org/> and get started immediately. Edublogs.org also provides detailed video tutorials and support for every aspect of blog maintenance—from sign-up to password protection. However, you might consider enlisting the help of your students when blogging questions arise. After-all, many of them are blogging beyond the classroom!

Help the Last to Become First

New literacies provide new opportunities. We need to take advantage of these opportunities to bring marginalized students to the center of our new literacies classrooms. Often, students get to go on the Internet when they finish their work. This helps the rich to become richer and the poor to become poorer with online literacy skills. Instead, whenever you bring a new technology tool with new literacies into the classroom, you should follow an important principle: Introduce new literacies, first, to your weaker readers and writers. This privileges the weaker student, since she is now literate in this new literacy while others are not. The strategy places previously marginalized students into an important classroom position and allows them to regain the excitement about learning that sometimes starts slipping away because of challenges they face with foundational reading and writing tasks. It is a powerful strategy, a special one that the new literacies of the Internet and other Information and Communication Technologies provide.

If you wish to see how one teacher helped a marginalized student become the expert in the new literacies of a software tool, KidPix, view the video located at: <http://ctell.uconn.edu/cases/newliteracies.htm>. This teacher has set up a KidPix center activity to accompany a class reading of *The Mitten* by Jan Brett. Students are to learn the new literacies in KidPix by being required to draw a mitten, write a response to the story inside the

mitten, and then decorate the borders in a manner similar to Jan Brett, using the stamps available in KidPix. This experienced teacher has already taught these KidPix skills to a young boy, one of the weaker readers in her class. (He is hidden behind the teacher in the opening seconds of the video.) Watch how the teacher introduces the center activity to a young girl, one of the better readers and writers in the class, and then purposefully backs away while the weaker reader takes over instruction. It is a masterful display of this special opportunity that new literacies provide for bringing marginalized students back into the center of your classroom literacy program.

Keep a Patient Heart and Be Willing to Help Others on Their Journeys

During a period of rapid change in the nature of literacy, all of us are new literacy learners. We all need to be patient with ourselves and patient with others, as each of us is learning new aspects of what it takes to be a proficient online reader. This is a time when each of us will learn new things from one another about the Internet. Most importantly, our students will also be teaching us important new lessons. We need to be open to these new learning opportunities and learn how to distribute new discoveries by students throughout our classes.

Thinking About the New Literacies of Online Reading Comprehension Instruction

Each of us seeks to change the world through the small steps we take each day in our classrooms, helping students to become better readers and writers. It is why we initially became teachers. It is also why we are so passionate about the potential of literacy to change lives. The Internet allows us to profoundly alter the opportunities available to our students, helping them to learn how to read, write, and communicate in this important new context for learning. We hope the steps we have outlined above will help you on your own journey as, together, we rewrite the nature of reading instruction to include the new literacies of online reading comprehension.

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Donald J. Leu, a graduate of Michigan State, Harvard, and Berkeley, is the John and Maria Neag Endowed Chair in Literacy and Technology and holds a joint appointment in Curriculum and Instruction and Educational Psychology at the University of Connecticut. Dr. Leu directs the New Literacies Research Lab at the University of Connecticut and is a member of the Board of Directors of the International Reading Association. He has also served as President of the National Reading Conference. His work focuses on the new skills and strategies required to read, write, and learn with Internet technologies and the best instructional practices that prepare students for these new literacies. He has more than 100 research publications and sixteen books and he has given keynote addresses in Europe, Australia, Asia, South America, and North America. He is currently a Principal Investigator on a number of federal research grants (CTELL, The New Literacies of Online Reading Comprehension, and NAEP Secondary Reanalysis) and is editing the Handbook of Research on New Literacies (Erlbaum) with Julie Coiro, Michele Knobel, and Colin Lankshear.

Cara Mulcahy is an Assistant Professor in the Department of Reading and Language Arts at Central Connecticut State University. She teaches classes in the areas of language arts instruction, content area literacy and critical literacy. Dr. Mulcahy's research interests lie in the areas of critical literacy, adolescent literacy, critical pedagogy, social justice, and issues of diversity.

Sally M. Reis is a Professor and the past Department Head of Educational Psychology Department at the University of Connecticut, where she also serves as a Principal Investigator for the National Research Center on the Gifted and Talented. She was a teacher for 15 years, 11 of which were spent working with gifted students on the elementary, junior high, and high school levels. She has authored more than 140 articles, 11 books, 55 book chapters, and numerous monographs and technical reports. Her research interests are related to special populations of gifted and talented students, including students with learning disabilities, gifted females and diverse groups of talented students. She is also interested in extensions of the Schoolwide Enrichment Model for both gifted and talented students and as a way to expand offerings and provide general enrichment to identify talents and potentials in students who have not been previously identified as gifted. Dr. Reis was recently awarded a Distinguished Scholar of the National Association for Gifted Children and the University of Connecticut Board of Trustees Distinguished Scholar.

Ruby Sanny is an Assistant Professor in the Department of Curriculum and Instruction at Illinois State University. Her current research interests include: elementary teacher education; elementary literacy teacher curriculum and pedagogy; the intersection of literacy, teacher preparation,

and technology; and urban teacher education.

Donita Massengill Shaw is an Assistant Professor in the Reading and Literacy program area at the University of Kansas. She teaches literacy methods courses in pre-service teacher preparation, and graduate level courses in comprehension and writing/spelling. She has taught at the elementary and middle school level, as well. Donita's research focuses on orthography for adult learners and beliefs of pre-service teacher candidates. Other areas of interest include the change process for both novice and in-service teachers, and beginning phonics and handwriting for struggling students.

Sheelah M. Sweeny is a doctoral candidate at the University of Connecticut, pursuing a degree with a dual concentration in Educational Psychology in the area of gifted and talented education, and Curriculum and Instruction in the area of literacy development. Her areas of interest include reading instruction for all students, including high ability readers, comprehension strategy instruction and integration of new literacies throughout the curriculum. Prior to her work at the University of Connecticut, Sheelah taught second and third grade and gifted and talented students. Sheelah helped write the Global Studies Curriculum for Charter Oak Academy in West Hartford, Connecticut, which incorporated differentiated instruction and the Enrichment Triad Model in order to provide a more enriched curriculum for a culturally and economically diverse student body. Sheelah is active in educational organizations, including the Connecticut Reading Association, where she is the Co-President of the Greater Hartford Area Council. She has co-authored an article in the *Gifted Education Communicator* and she is a frequent presenter of workshops for teachers.

Mickey Waxman holds a Master of Science degree in social psychology. He is the statistics and statistical computing consultant for the Information Technology division of the University of Kansas. He teaches courses on the use of statistical software, management of research data and data mining.

Lisa Zawilinski is a doctoral student in Curriculum and Instruction at the University of Connecticut and a part-time Reading and Language Arts Consultant in Simsbury, CT. She is studying the ways in which Internet communication technologies enhance classroom instruction, support collaborative knowledge building, and prepare students for the 21st century literacy demands. Lisa received her Bachelors and Masters degrees from the University of Connecticut and has more than 13 years experience in the field of education working with students in grades K-6. As former co-director for the Connecticut Writing Project, Lisa has also provided workshops in technology and writing across the content areas.