

CLASSROOM INTERNATIONALISATION THROUGH TEACHING NEW LITERACIES

INTERNATIONALISATION DANS LA SALLE DE CLASSE PAR L'ENSEIGNEMENT DE "NOUVELLES LITTÉRATIES"

INTERNAȚIONALIZARE ÎN SALA DE CLASĂ PRIN PREDAREA NOILOR COMPETENȚE

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Abstract

This paper tackles the so much used term “literacy”. At first we intend to give both a theoretical framework, namely, the definition of the term ‘new literacies’ within the nowadays’ social context and a dual-level theory of new literacies that is the lowercase (new literacies) and the uppercase (New Literacies). Moreover, it also contains the central principles of the uppercase theory of new literacies as well as the elements of the new literacies of online research and comprehension, a lowercase theory of new literacies.

Résumé

Cet article aborde le terme si souvent utilisé "littératies". Au début, nous avons l'intention de donner à la fois un cadre théorique, pour savoir la définition du terme «nouvelles littératies» dans le contexte social actuel et une théorie à deux niveaux des nouvelles littératies, « les minuscules » (nouvelles littératies) et « les majuscules ». (Nouvelles littératies). De plus, il contient également les principes centraux de la théorie des majuscules des nouvelles littératies ainsi que les éléments des nouvelles littératies de la recherche et de la compréhension en ligne, une théorie en « minuscule » des nouvelles littératies.

Rezumat

Această lucrare abordează termenul atât de mult utilizat, și anume, "competențe". La început ne propunem să oferim atât un cadru teoretic, prin definirea termenului în cadrul contextului social contemporan și o teorie pe două niveluri a "noilor competențe" care este cea mai scrisă cu litere mici (noile competențe) și cea scrisă cu majuscule (Noile Competențe). Pe lângă cele menționate, această lucrare conține și principiile centrale ale teoriei noilor competențe, precum și elementele acestora legate de cercetare și de înțelegerea a tot ceea ce există în mediul on-line.

Key words: *new literacies, theory, practice, internationalisation*

Mots-clés: *nouvelles littératies, théorie, practice, internationalisation*

Cuvinte cheie: *noi competențe, teorie, practică, internaționalizare*

Theoretical framework

The Internet has become increasingly central to our daily lives and has changed the way we access information, interact and learn. It is the defining technology for literacy and learning in the 21st century. The new skills required by the new literacies of the Internet and other Information and Communication Technologies (ICTs) have become important determinants of an engaged life in an online age. The Internet and other ICTs are increasingly an important source of information and require new literacies to effectively exploit their information potential. Individuals, groups and societies who can identify the most important problems, locate useful information the fastest, critically evaluate information most effectively, synthesize information most appropriately to develop the best solutions and then communicate these solutions to others most clearly will succeed in the challenging times that await us. As teachers we need to use the power of the Internet to support literacy and learning and prepare our students for the changes implied.

The definition of the term "New Literacies"

The term "**New literacies**" generally refers to new forms of literacy made possible by digital technology developments and it is relatively new within the field of literacy studies. There are a range of terms used by different researchers when referring to new literacies, including 21st century literacies, internet literacies, digital literacies, new media, media literacies, multiliteracies, information literacy, ICT literacies, and computer literacy. The first documented mention of it in an academic article title dates to 1993 in a text by David Buckingham. (Buckingham, p.25). However, the definition remains open. Some people use the term new literacies to capture the new social practices of literacy that are emerging. Rather than seeing new social practices emerging from new technologies, they tend to see new technologies emerging from new social practices. Others use the term new literacies to describe important new strategies and dispositions that are essential for online research and comprehension. Still others see new literacies as new discourses or new semiotic contexts. Others see literacy as differentiating into multiliteracies or multimodal contexts and some see a construct that juxtaposes several of these orientations. When one includes terms such as ICT literacy or informational literacy, the construct of new literacies becomes even broader. One group of scholars argues that literacy is now deictic. *Deixis* is a term used by linguists to define words whose meanings change rapidly as their context changes. Tomorrow, for example, is a deictic term; the meaning of "tomorrow" becomes "today" every 24 hours. The meaning of literacy has also become deictic because we live in an age of rapidly changing information and communication technologies, each of which requires new literacies and new social practices. Effective online information use requires additional online reading comprehension practices, skills, and dispositions. (Coiro, Knobel, Lankshear, Leu, p.1-22).

Historically, literacy has always changed, but over substantial periods of time. Nowadays, however, the emergence of the Internet has brought about a period of rapid, continuous technological change and, as a result, rapid, continuous change in the nature of literacy. The Internet is the most efficient system in the history of civilization for delivering new technologies that require new skills to read, write, and communicate effectively. It is also an amazingly efficient system for rapidly disseminating new social practices for the use of these technologies. As a result, new technologies and new social practices rapidly and repeatedly redefine what it once meant, in a simpler world, to be able to read, write and communicate effectively. To be literate today often means being able to use some combination of blogs, wikis, texting, search engines, Facebook, foursquare, Google Docs, Skype, Chrome, iMovie, Contribute, Basecamp, or many other relatively new technologies, including thousands of mobile applications, or "apps." Commonly recognized examples of new literacies include such practices as instant messaging, blogging, maintaining a website, participating in online social networking spaces, creating and sharing music videos, podcasting and videocasting, photoshopping images and photo sharing, emailing, shopping online, digital storytelling, participating in online discussion lists, emailing and using online chat, conducting and collating online searches, reading, writing and commenting on fan fiction, processing and evaluating online

information, creating and sharing digital mashups, etc. To be literate tomorrow will be defined by even newer technologies that have yet to appear and even newer social practices that we will create to meet unanticipated needs. Thus, the very nature of literacy continuously changes and when we speak of new literacies, we mean that literacy is not just new today; it becomes new every day of our lives. It is becoming increasingly clear that the deictic nature of literacy will require us to continuously rethink traditional notions of literacy. (Donald J. Leu, J. Gregory McVerry, W. Ian O'Byrne, Carita Kiili, Lisa Zawilinski Heidi Everett-Cacopardo, Clint Kennedy, Elena Forzani, p. 5-7)

The nowadays social context

The social contexts have always shaped both the function and form of literacy practices and been shaped by them in return. Nowadays, the social context has produced new information and communication technologies (ICTs), and the new literacies that these technologies demand. The most important social forces at work today that frame, and are framed by, the changes to literacy include the following:

- Global economic competition within economies based increasingly on the effective use of information and communication. Today, global economic competition requires organizations to abandon the traditional command and control structures to leverage all of their intellectual capital, operate more productively and become more competitive. The rapid integration of the Internet into the workplace, enables better information sharing, communication and problems solving.
- The rapid appearance of the Internet in both our professional and personal lives.
- Public policy initiatives by nations that integrate literacy and the Internet into instruction.

A dual - level theory of new literacies

According to the continuous changes and extraordinary complexities taking place to literacy as well as the growing multiplicity of perspectives implied, a dual-level theory of new literacies emerges. The two levels are: **the lowercase (new literacies)** and **the uppercase (New Literacies)**.

Lowercase theories explore a specific area of new literacies and/or a new technology, such as the social communicative transactions occurring with text messaging. Lowercase theories also include those that explore a focused disciplinary base, such as the semiotics of multimodality in online media or a distinctive conceptual approach such as new literacy studies. These lowercase theories are better able to keep up with the rapidly changing nature of literacy in a deictic world because they are closer to the specific types of changes that are taking place. Lowercase theories also permit our field to maximize the lenses we use and the technologies and contexts we study. Every scholar who studies new literacy issues is generating important insights for everyone else, even if we do not share a particular lens, technology, or context.

In order to come to understand these insights, taking place in many different fields from many different perspectives, a second level of theory, an **uppercase New Literacies** theory has appeared. New Literacies, as the broader, more inclusive concept, includes those common findings emerging across multiple, lowercase theories. New Literacies theory benefits from work taking place in the multiple, lowercase dimensions of new literacies by looking for what appears to be the most common and consistent patterns being found in lowercase theories and lines of research. This approach permits everyone to fully explore their unique, lowercase perspective of new literacies, allowing scholars to maintain a close focus on many different aspects of the shifting landscape of literacy during a period of rapid change. At the same time, each of us also benefits from expanding our understanding of other, lowercase, new literacies perspectives. By assuming change in the model, everyone is open to a continuously changing definition of literacy, based on the most recent data that emerges consistently, across multiple perspectives, disciplines, and research traditions. Moreover, areas in which alternative findings emerge are identified, enabling each to be studied again, from multiple perspectives. From this process, common patterns emerge and are included in a broader, common, New Literacies theory. This process enables the broader theory of New Literacies

to keep up with consistent elements that will always define literacy on the Internet while it informs each of the lowercase theories of new literacies with patterns that are being regularly found by others.

The central principles of an Uppercase Theory of New Literacies:

- **The Internet is this generation's defining technology for literacy and learning within our global community.**

A central principle of New Literacies theory is that the Internet has become this generation's defining technology for literacy in our global community. According to one of the most systematic evaluations of worldwide Internet use, over 2.4 billion individuals now use the Internet—more than one third of the world's population. Moreover, at the current rate of growth, Internet use will be ubiquitous in the world within the next decade. Never in the history of civilization have we seen a new technology adopted by so many, in so many different places, in such a short period of time, with such powerful consequences for both literacy and life.

- **The Internet and related technologies require additional new literacies to fully access their potential.**

New technologies such as the Internet and other ICTs require additional social practices, skills, strategies, and dispositions to take full advantage of the affordances each contains. Typically, new literacies build upon foundational literacies rather than replace them completely. Foundational literacies include those traditional social practices of literacy and the elements of literacy required for traditional text reading and writing, such as word recognition, vocabulary, comprehension, inferential reasoning, the writing process, spelling, response to literature, and others required for the literacies of the book and other printed material. However, foundational literacies will be insufficient if one is to make full use of the Internet and other ICTs. Reading, writing, and communication will take new forms as text is combined with new media resources and linked within complex information networks requiring new literacies for their use. During this process, new online and traditional offline literacies are often layered in rich and complex ways. (Leu, Coiro, Castek, Hartman, Henry, & Reinking, p. 1153-1155)

- **New literacies are deictic.**

The rapid transformations in the nature of literacy caused by technological change is a primary source for the deictic nature of literacy. New technologies regularly and repeatedly transform previous literacies, continually redefining what it means to become literate. The deictic nature of literacy is also caused by a second source: the envisionments we construct as we create new social practices with new technologies. Envisionments take place when individuals imagine new possibilities for literacy and learning, transform existing technologies and practices to construct this vision, and then share their envisionment with others. Finally, rapid transformations in the nature of literacy are produced because the Internet and other ICTs permit the immediate exchange of new technologies and social practices. Because we can immediately download a new technology from the Internet or send it to millions of individuals with just a keystroke, the changes to literacy derived from new technologies happen at a pace faster than ever before. In short, the Internet and other ICTs not only change themselves but also provide the central vehicle for exchanging new technologies for information and communication and new social practices. Thus, the already rapid pace of change in the forms and functions of literacy is exacerbated by the speed with which new technologies and new social practices are communicated. (Coiro, Knobel, Lankshear, Leu, p. 27-30)

- **New literacies are multiple, multimodal, and multifaceted.**

New literacies are multiple, multimodal, and multifaceted and as a result, our understanding of them benefits from multiple points of view. From a sociolinguistic perspective, the multiliteracies have been defined as a set of open-ended and flexible multiple literacies required to function in diverse social contexts and communities. The same multiplicity of literacy has also emerged because of multiple technological contexts. The Internet and other ICTs require that we develop a systematic understanding of the multiple literacies that exist in both new literacies practices and in the skills,

strategies, and dispositions that are required with new technologies. This multiplicity of new literacies is apparent on at least three levels. First, meaning is typically represented with multiple media and modalities. Unlike traditional text forms that typically include a combination of two types of media—print and two-dimensional graphics—Internet texts integrate a range of symbols and multiple-media formats, including icons, animated symbols, audio, video, interactive tables, and virtual reality environments. As a result, we confront new forms and combinations of texts and images that challenge our traditional understandings of how in is represented and shared with others. Semiotic perspectives on new literacies allow an especially rich understanding of changes taking place in these areas. Second, the Internet and other ICTs also offer multiple tools. Literate individuals will be those who can effectively determine, from the Internet's multiple offerings, a combination of tool(s) and form(s) that best meet their needs. Thus, New Literacies theory includes research that is taking place with multiple forms of online meaning and content construction. It assumes that proficient users of the Internet must understand how to construct meaning in new ways as well as design, manipulate, and upload their own information to add to the constantly growing and changing body of knowledge that defines the Internet. A final level of multiplicity consists of the new social practices and skills that are required as we encounter information with individuals from a much wider range of social contexts. The global sharing of information permitted by the Internet introduces new challenges as we interpret and respond to information from multiple social and cultural contexts that share profoundly different assumptions about our world. These multiple contexts for new literacies have important implications for educators preparing students to critically understand and interpret the meanings they find on the Internet and to communicate with others. In a world of exploding technologies and literacy practices, it becomes increasingly difficult to think of literacy as a singular construct that applies across all contexts. As a result, we benefit from the complexity that multiple theoretical perspectives provide. Any research study in new literacies benefits when multiple theoretical frameworks inform the research questions and results. It also suggests that new literacies are best studied in interdisciplinary teams as questions become far too complex for the traditional single investigator model. (Jewitt, Kress, p. 56)

- **Critical literacies are central to new literacies.**

New Literacies demand new forms of critical literacy and greater dependency on critical thinking and analysis. Open networks, such as the Internet, permit anyone to publish anything; this is one of the opportunities this technology presents. It is also one of its limitations; information is much more widely available from people who have strong political, economic, religious, or ideological stances that profoundly influence the nature of the information they present to others. As a result, we must assist students to become more critical consumers of the information they encounter. (Bråten, Strømsø, & Salmerón, p. 180-192). Although the literacy curriculum has always included items such as critical thinking and separating fact from propaganda, more instructional time devoted to more complex analytic skills will need to be included in classrooms where the Internet and other ICTs play a more prominent role. As we begin to study the new literacies of the Internet, we will depend greatly on work from the communities of critical literacy and media literacy to provide us with the best research in this area.

- **New forms of strategic knowledge are required with new literacies.**

New technologies for networked information and communication are complex and require many new strategies for their effective use. Hypertext technologies, embedded with multiple forms of media and unlimited freedoms of multiple navigational pathways, present opportunities that may seduce some readers away from important content unless they have developed strategies to deal with these seductions. Other cognitive and aesthetic changes to text on the Internet presents additional strategic challenges to comprehension, inquiry, and information seeking. Thus, new literacies will often be defined around the strategic knowledge central to the effective use of information within rich and complexly networked environments. (Afflerbach, & Cho, p. 250-255)

- **New social practices are a central element of New Literacies.**

It is increasingly clear that new literacy practices are a central feature of New Literacies. Work by Lankshear and Knobel show us how two important elements of the changing nature of literacy generate additional, new literacies practices. First, new digital technologies enable new ways of constructing, sharing, and accessing meaningful content. Second, the collaborative, distributed and participatory nature of these digital spaces enable the generation of what Lankshear and Knobel call a distinctive ethos and an engagement in participatory culture. As a result, continuously new social practices of literacy will emerge, often within new discourse communities, and serve to redefine literacy and learning. New social practices will be needed in classrooms to interact within increasingly complex technologies for information and communication. Models of literacy instruction, for example, have often focused on an adult whose role was to teach the skills he or she possessed to a group of students who did not know those skills. This is no longer possible, or even appropriate, within a world of multiple new literacies. No one person can hope to know everything about the expanding and ever-changing technologies of the Internet and other ICTs. In fact, today, many young students possess higher levels of knowledge about some of these new literacies than most adults. Consequently, effective learning experiences will be increasingly dependent upon new social practices, social learning strategies, and the ability of a teacher to orchestrate literacy learning opportunities between and among students who know different new literacies. This will distribute knowledge about literacy throughout the classroom, especially as students move above the stages of foundational literacy. One student, for example, may know how to edit digital video scenes, but another may know how best to compress the video so it can function optimally in a Web-based environment. This social learning ability may not come naturally to all students, however, and many will need to be supported in learning how to learn about literacy from one another. (Lankshear & Knobel, p. 100-112)

- **Teachers become more important, though their role changes, within new literacy classrooms.**

The appearance of the Internet and other ICTs in school classrooms will increase the central role that teachers play in orchestrating learning experiences for students. Teachers will be challenged to thoughtfully guide students' learning within information environments that are richer and more complex than traditional print media, presenting richer and more complex learning opportunities for both themselves and their students (Coiro p. 442–471). In a world of rapidly changing new literacies, it will be common for some students to be more literate with some technologies than their teacher is. As a result, teachers will increasingly become orchestrators of learning contexts rather than dispensers of literacy skills. By orchestrating opportunities for the exchange of new literacies, both teachers and students may enhance their literacy skills and their potential for effective communication and information use. Because teachers become even more important to the development of literacy and because their role changes, an expanded focus and greater attention will need to be placed on teacher education and professional development in new literacies.

1.2.2. The New Literacies of Online Research and Comprehension: A Lowercase Theory of New Literacies.

The new literacies of online research and comprehension include the following elements:

- **Online research and comprehension is a self-directed process of text construction and knowledge construction.** Readers choose the online texts that they read through the links that they follow as they gather information and construct the knowledge needed to solve a problem. Each reader typically follows a unique informational path, selecting a unique sequence of links to information and sampling unique segments of information. Thus, in addition to constructing knowledge in their minds, readers also physically construct the texts they read online. While this is also possible during offline reading, of course, it always takes place during online reading. As a result, seldom do two readers read the same text to solve the same problem during online reading.

- **Five practices appear to define online research and comprehension processing. These practices are: identifying a problem and then locating, evaluating, synthesizing and communicating information.** Within these five practices reside the skills, strategies, and dispositions that are distinctive to online reading comprehension as well as to others that are also important for offline reading comprehension. (Leu, Coiro, Castek, Hartman, Henry, & Reinking, p. 151).

Reading Online to Identify Important Questions.

We read on the Internet to solve problems and answer questions. How a problem is framed or how a question is understood is a central aspect of online research and comprehension. Reading that is initiated by a question differs in important ways from reading that is not. (Leu, Coiro, Castek, Hartman, Henry, & Reinking, p. 152).

Reading to Locate Information.

A second component of successful online research and comprehension is the ability to read and locate information that meets one's needs. (Eagleton, Guinee, & Langlais p. 28–35.) The reading ability required to locate information on the Internet may very well serve as a gatekeeping skill; if one cannot locate information, one will be unable to solve a given problem. New online reading skills and strategies may be required, for example, to generate effective keyword search strategies, to read and infer which link may be most useful within a set of search engine results and to efficiently scan for relevant information within websites. (Henry, p. 614–627).

Reading to Evaluate Information Critically.

Critically evaluating online information includes the ability to read and evaluate the level of accuracy, reliability, and bias of information. Although these skills have always been necessary to comprehend and use offline texts, the proliferation of unedited information and the merging of commercial marketing with educational content present additional challenges that are quite different from traditional print and media sources. (Fabos, p. 839–870) One example would be the lack of uniform standards and cues regarding document type in online text environments as necessitating a renewed interest in how students evaluate online information. Without explicit training in these new literacy skills, many students become confused and overwhelmed when asked to judge the accuracy, reliability, and bias of information they encounter in online reading environments. Consequently, as more students turn primarily to the Internet for their information, these critical evaluation strategies become more relevant than ever before. (Bråten, Strømsø & Salmerón, p. 194)

Reading to Synthesize Information.

Successful Internet use also requires the ability to read and synthesize information from multiple online sources. Synthesis requires the reader to bring together an awareness of the reading processes and an underlying understanding of the text. The Internet introduces additional challenges to coordinate and synthesize vast amounts of information presented in multiple media formats, from a nearly unlimited and disparate set of sources. This presents important challenges to online readers as they determine what to include and what to exclude. (Jenkins, p. 33)

Reading to Communicate Information.

A fifth component of successful online research and comprehension is the ability to communicate via the Internet to seek information or share what one has learned. The interactive processes of reading and writing have become so intertwined on the Internet that they often happen simultaneously during communication. Moreover, each specific communication tool on the Internet is constituted differently and presents a range of new skills, strategies, and social practices to use them effectively (Leu, Coiro, Castek, Hartman, Henry, & Reinking, p. 170). New types of strategic knowledge are required, for example, to effectively participate and communicate in social networking environments such as e-mail, blogs, wikis, and instant messaging.

- **Online research and comprehension is not isomorphic with offline reading comprehension.**

Additional skills and strategies may be required during online research and comprehension beyond those required for offline reading and comprehension because online research and comprehension is a **problem-based task**, while offline reading includes a wider range of

comprehension tasks. Furthermore, the reading skills required to locate information online are such “bottleneck” skills that students who lack this ability perform poorly online, even though they may be high-performing offline readers. The levels of critical evaluation are also higher in the case of online reading. Online assessments that require richer, more complex use of online tools such as: search engines, e-mail attachments, blogs, wikis or more complex information spaces, may generate less of a relationship with offline reading comprehension compared with online assessments that simply require the reader to read information on a single website. (Coiro, p. 352–392)

- **Online contexts may be especially supportive for some struggling readers.**

Some struggling readers do very well with online research and comprehension because units of text are typically shorter online as readers follow informational links from one location to another, seeking information that will help them solve their informational problem. Shorter units of text are easier for struggling readers to process. In addition, online readers construct their own texts to read, as they choose different paths to follow. This increases engagement and makes it more likely that readers find their way to texts appropriate for their abilities. Also, online texts contain multimedia, a traditionally supportive context for struggling readers. Finally, each webpage is really a graphic image and struggling readers are often quite skilled readers of information presented graphically. Sometimes, too, these readers use a new literacies skill, the use of Command + F, to quickly scan for information on a webpage with extensive amounts of text. (Coiro, p. 440-442)

- **Adolescents are not always very skilled with online research and comprehension.**

Although adolescent “digital natives” may be skilled with social networking, texting, video downloads, MP3 downloads, or mash-ups, they are not always as skilled with online research and comprehension, including locating and critically evaluating information. In fact, adolescents tend to overgeneralize their ability to read online information effectively, informed by their ability to engage successfully with online social networking, texting, and video games. (Leu, Kinzer, Coiro, & Cammack, p. 1570)

- **Collaborative online reading and writing practices appear to increase comprehension and learning.**

Emerging work suggests that collaborative online reading and writing may yield important gains in literacy and learning. Work by Kiili suggests that collaborative reading of online information about a controversial issue can lead to important learning gains. Comparing individual reading with collaborative online reading, individual readers concentrated on gathering facts, whereas the collaborative reading context offered additional opportunities for deeper exploration of ideas and different perspectives. Greater collaborative online reading also appears to lead to greater meaning construction and knowledge construction. (Kiili, Laurinen, & Marttunen, p. 75–95). So, as teachers, we should explore the importance of framing online research and comprehension as a collaborative, social practice. A highly effective example in this respect would be to get our students engaged in collaborative, online projects with students in other nations. Also, the opportunities to co-construct meaning and responses to prompts that require students to read on the Internet may foster more efficient and productive comprehension of online informational texts even among readers who are skilled at comprehending online texts independently.

New Literacies theory tells us that the Internet and other continuously emerging ICTs will be central to both our personal and professional lives and that these technologies require new literacies to effectively exploit their potential. It also suggests that we must begin to integrate these new literacies into classrooms if we hope to prepare all students for the literacy futures they deserve. Most important, it suggests that continuous change will define the new literacies of the Internet and other ICTs. Because of this rapid and continuous change, misalignments in assessment and instruction are likely to appear until we begin to recognize that literacy has become deictic, and take action not to fall behind the more contemporaneous realities of literacy. These misalignments are likely to create important problems for any educational system unable to keep up with the changes. During a period of rapidly changing new literacies, we will need to adapt to the continuously

changing nature of literacy in several areas. These include research, assessment, and professional development and teacher education.

- As far as **research** is concerned, it might begin by focusing on two major issues:

- (1) What are the social practices, skills, strategies, and dispositions essential to the acquisition of new literacies?

- (2) How might we best support the development of these aspects of new literacies within both real and virtual learning contexts?

As we develop answers to the first question, we should keep in mind that any answers will be in continuous evolution, as even newer technologies will require additional skills, strategies, dispositions, and social practices for their effective use. We should begin now to conceptualize this problem from a deictic perspective, perhaps with a research focus on how students and teachers continually adapt to the changes that will be a part of our lives. Research on how students and teachers learn how to learn may be far more important than a listing of specific skills and strategies within the continuously changing landscape of literacy that will define our future. Answers to the second question are likely to take place within a context of **problem-based learning** because new literacies are often used to solve problems and communicate solutions with online information. (Dochy, Segers, Van den Bossche, & Gijbels, p. 533–568).

Another area in which important research is taking place is **online gaming** as literacy practices and literacy-related learning activities occur within online game play especially in the case of collaborative video game play experiences. (Gee, p. 20) Nevertheless, schools continue to emphasize traditional text-based literacy practices while doing little to integrate the potentials of gaming into the school curriculum.

In order to be more effective as far as our teaching job is concerned, we also need to consider broader sources of **meaning beyond text**. Work by Kress, Hull, and others (Hull & Schultz, p. 16-17; Jewitt & Kress, p. 18-20; Kress, p. 23) tell us that we must understand more fully the roles of semiotics and multimodal forms if our students are to use the affordances of tools now required in informal as well as high-performance workplace and academic settings. We must begin to shift from a focus mainly on text comprehension strategies to the interaction among text, graphics, and other content, especially during out-of-school contexts. These and other areas of research that need to be explored may not be able to keep up with the rapidly changing landscape of literacy if traditional research paradigms are used; important aspects of literacy are likely to change before a body of consistent research findings can be gathered. Because new literacies continuously change, we require new epistemologies and research practices that keep up with the rapid changes we anticipate. How, for example, can we keep up with new ideas about what to teach and how to teach within research and dissemination paradigms that require five years or more between the conception of a research problem and the wide dissemination of results through research journals? How can we assess students on their ability to use the Internet and other ICTs when the very skills we assess will change as soon as new technologies appear? While a New Literacies perspective does not provide complete answers to these questions, it suggests that these are critical questions to ask. The answers may emerge in the new models of research likely to appear among those who understand the changes we are experiencing. Those who develop digital curricula, for example, may come to realize that their most important resource is not the digital curriculum they provide to schools but rather the data they obtain from students who use the curriculum. With a network that both delivers curricular activities and assesses learning each day, data could be used to conduct immediate research on the design of lesson activities, revising a different element each night to obtain immediate results on the effects of that change the next day. Anyone with access to these data, and with the appropriate resources, will be able to conduct research on a scale and with a speed that we have not previously experienced. It is quite possible that the assumptions we currently have about how, when, where, and why instructional research is conducted will change rapidly in an age of new literacies.

- Taking **assessment** into consideration, teachers lack valid, reliable, and practical assessments of new literacies to inform instruction and help students become better prepared for an online age of

information and communication. Dynamic, online texts and their associated literacy practices require dynamic assessments that are sensitive to the diverse, multiple, and rapidly changing ways in which learners read, write, learn, and communicate information. Similarly, a range of social networking and information-sharing tools (e.g., Facebook, Twitter, Skype) continue to emerge and give rise to new means of communication and ways of connecting and sharing with wider and more diverse groups of individuals than ever before. Consequently, authentic assessments of new literacies should incorporate the information and communication tools used in the workforce and in students' daily lives (e.g., interactive blogs, wikis, e-mail) to pose and answer questions, reflect on and synthesize new learning and collaborate across classrooms. Assessments of new literacies should also document students' evolving dispositions toward participation in globally networked communities. This includes assessments that document the ability to work productively as a team, appreciate differences in cultural practices and work patterns, demonstrate flexibility and perseverance during online inquiry, and respond appropriately to peer feedback. (Popham, p. 85–86) The most prominent challenge, perhaps, is that literacy assessments, to date, are always assessments of an individual working alone. Given the importance of social learning and collaborative meaning construction on the Internet and other ICTs, we will need to assess how well students can learn new literacies from others and how well they can co-construct meaning and collaborate in constructing written information with others. Learning how to learn from others and learning how to collaboratively construct meaning will be increasingly important in the years ahead. It seems clear that new technologies will require new approaches to both what is assessed and how we go about doing so.

- Perhaps the greatest challenge that many educational systems face lies in **professional development**. It is likely that new models of professional development will require more extended commitments from school leadership teams, over longer periods of time, than we are used to. It is well established that professional development with technology integration takes longer than other areas of classroom instruction do, as much as two to three times as long to produce the expected effects. This is because training requires teachers to develop more than new instructional strategies. They also have to develop proficiency with new technologies, an even greater challenge for some (Saylor & Kehrhahn, p.48–53). Both new and experienced teachers should be trained to support students in the new literacies of ICTs in the classroom as the Internet resources will increase, not decrease and the central role teachers play in orchestrating learning experiences for students as literacy instruction converges with Internet technologies. The richer and more complex information environments of the Internet will challenge teachers to thoughtfully support student learning in these new literacies contexts.

Short conclusion

The modern social context has produced new information and communication technologies and the new literacies that these technologies demand. It is clear that the internet is reshaping the nature of literacy education, providing many new and exciting learning opportunities in the classroom. Our concern has been to fully understand the terminology and how these new literacies can better be integrated into worthwhile classroom learning.

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