

THE HANDBOOK OF RESEARCH IN NEW LITERACIES

Editors:

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Central Issues In New Literacies And New Literacies Research

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Preface

Purpose

During a period when the Internet has profoundly altered our literacy lives, the *Handbook of Research on New Literacies* provides a central resource to support the emergence of new literacies research. It brings together leading scholars from around the world to review research in their area, from the perspectives they find to provide the greatest insight, as they study how the Internet and other digital technologies profoundly redefine what it means to be literate. We expect the *Handbook of Research on New Literacies* to provide the central leadership for this newly emerging field, directing scholars to the major issues, theoretical perspectives, and interdisciplinary research on new literacies. The *Handbook* helps us to begin the bold new thinking required to reconceptualize literacy research.

Students of the history of literacy research will recall that reading research attracted a broad collection of researchers, from many disciplines, during the final decades of the 20th century. That intensive, interdisciplinary effort prompted a richer and more complex understanding about the nature of reading and moved literacy research forward in important new directions. A similar phenomenon may be taking place today with new literacies. As literacy and technology converge on the Internet, many scholars, from many different disciplines, are moving their research into this arena. They find that the constructs emerging in new literacies

research to inform their own work in productive ways. At the same time, it is increasingly clear that new literacies research also impacts societies, education systems, and public policies in powerful ways. As a result, educators, policy makers, employers, and the public at large, recognize that these new literacies of the Internet will be central to the most important literacy and learning issues of our generation. We believe it is time to capture the emergence of this new area of research, to inform others, and to begin the construction of an important new area of inquiry. We seek to accomplish all of this with *The Handbook of Research on New Literacies*.

This first volume of the *Handbook* is much more about raising questions than it is about providing answers, though both will be found in abundance within these pages. The *Handbook of Research on New Literacies* provides a single location for reviewing wide-ranging, interdisciplinary research, through multiple lenses, and in multiple areas of inquiry, in order to determine the most important issues, problems, and questions that need to be studied as the Internet becomes this generation's defining technology for literacy and learning. Such a volume is integral to developing the multifaceted perspective necessary to improve our understanding of literacy in online and other digital spaces.

The ethos of this handbook is to provide conceptual, theoretical, and methodological shape for an emerging field without unduly foreclosing on potentially valuable perspectives and epistemological approaches. Our approach

has been to allow leading researchers to collectively define central constructs and central issues through their individual work, not to force a single perspective upon a newly emerging field. We are confident that this is the only sensible approach during the emergence of this important area of inquiry, one that takes full advantage of all perspectives about what new literacies are and how we might best study them.

Finally, the irony of a volume on new literacies research that appears within the pages of a 500-year old technology is not lost on us. Nor is the irony that changes to literacy happen so quickly that some elements of this change will appear, and go unreported in this handbook, during the time required to publish a hard copy volume of this nature. We expect that economic, technology, and research pressures will eventually remove these revealing ironies; the nature of literacy is changing far faster than some elements of our society can respond, especially those so intrinsically connected to printing press technologies. Like nearly everything else in literacy, this, too, will change.

Audience

The audience for this volume includes members of the international literacy research community, broadly conceived. This includes scholars from the traditional reading and writing research communities as well as scholars from information science, library and media studies, cognitive science, educational

psychology, psychology, sociolinguistics, linguistics, computer mediated communication, computer science, and other related areas that find new online literacies to be an important area of investigation. Graduate students in these disciplines will also find the collection of research reviews to be useful. The final section, where we provide reprints of central studies in this area along with commentaries by leading scholars, reflects a special commitment to our readers who are graduate students. We believe these commentaries will demonstrate the benefit of bringing multiple perspectives to bear on the interpretation of research and show students how leading scholars analyze research methods, results, and interpretations. Finally, given recent interest in data-driven public policies around the world, another important audience for this volume will be policy makers and school administrators who seek summaries of the latest research to inform their own important decisions. We believe the research reviews in this volume will be especially useful to their work.

Authors And Structure

Authors have been selected on the basis of their leadership and/or innovative research in their special area of investigation. Each has a clearly established reputation in his/her research area. We include leaders from around the world in the areas of social semiotics and multimodality, online research methodology, ethnographies of new literacies, multimedia studies, cognition and

instruction, blogging research, instant messaging research, gaming, information science, computer-mediated communication, e-learning and learning management, cultural influences on learning technologies, online navigation, reading comprehension research, child and adolescent literacy studies, qualitative methods, experimental methods, and many other important areas of inquiry that are taking place today.

It is far too early to neatly categorize new literacies research into orthogonal topics, each with clearly defined constructs. As with any newly emerging field, the work can be conceptually messy and inchoate. Thus, we are convinced that the structure of this volume will change in subsequent editions as topics, constructs, and perspectives become much more precisely defined. In this volume, we have tried to permit current work to logically cluster itself into categories.

After an initial chapter by the editors, the next five sections represent the principal areas in which significant developments are occurring at the present time. Section 1, *Methodologies*, addresses issues introduced by the broad range of methodologies with which research on new literacies is currently taking place. The sweep of these chapters demonstrates the extensive range of current work, from ethnographic approaches to experimental studies. In Section 2, *Knowledge and Inquiry*, the authors introduce a number of different perspectives central to understanding how best to use the informational potential of the Internet and other

digital contexts to acquire knowledge. Contributors to Section 3, *Communication*, review the latest research occurring in new communication contexts such as blogs, instant messaging, and other social networking tools. Articles in this section also explore the roles that gender and language play during new online literacy practices. Section 4, *Popular Culture, Community, and Citizenship: Everyday Literacies*, addresses research in new literacy spaces such as the online and offline worlds of gaming, anime, manga, and fanfiction as well as the range of challenges associated with issues of popular culture, identity, citizenship, online collaborative community projects and other aspects of everyday literacies. New ways of thinking about classroom instruction and assessment are introduced in Section 5, *Instructional Practices and Assessment*. This section covers new literacies research in classrooms ranging from elementary school to higher education and how we might consider assessing the new literacies beginning to appear in educational contexts. Finally, a special section, *Multiple Perspectives On New Literacies Research*, concludes the volume. Section 6 includes five reprinted articles that have been identified by the editors and section contributors as central to the fields in which they work, one from each of the main sections. It also includes commentaries on each study by two leaders in the area of new literacies research, each of whom brings a different perspective to the task. Thus, we invite the development of multiple perspectives to ensure that we begin to build richer, more diverse, and more complexly framed research in this area. We

seek to take advantage of the benefits that diverse lenses provide as we collectively build this area of inquiry.

The Editorial Team

Besides a wonderful collection of authors, an important advantage we possessed on this project was a diverse editorial team, each of whom takes a different theoretical and methodological stance in relation to issues of literacy and technology. The important research issues today have become far too complex for any single person to navigate; they require teams of people, each of whom brings their special expertise and theoretical perspective to the research enterprise. This is what we were fortunate to have. From a frenetic meeting over dinner in Melbourne after a long motorcycle ride, to lengthy working sessions in Mystic, Connecticut and Granada, Spain, the *Handbook* was completed in a truly global fashion as the editors managed their obligations in different parts of the world. Each of the editors contributed equally to the work on this volume, though in different ways and at different times. As a result, *both editor order and author order for the initial chapter were determined by the alphabetical order of our last names.*

Distinctive Features Of The Book

There are several distinctive elements that we sought to include in this volume:

1. *A Diverse International Editorial Team.* The editors come from New Zealand, Australia, and North America. Their backgrounds include work in out-of-school literacies, in-school literacies, professional development, online reading comprehension, instruction, assessment, teacher education, public policy, and a range of different technologies.
2. *International Contributions.* The contributions in this volume include 34 authors from North America, 10 from Australia, 7 from the UK, 2 from the Netherlands, and 1 each from Norway and South Africa.
3. *An Extensive, Rich, and Diverse Collection of Research Reviews.* This volume contains 43 reviews of research, including ten commentaries to five selected research studies. As such, the scope of this volume represents many different areas and topics that are now being looked at from a new literacies perspective.
4. *Multiple Theoretical Conceptualizations.* Many handbooks of research appear to privilege one, or several, theoretical perspectives over others. We attempted to avoid this limitation. We deliberately sought out disparate theoretical orientations to shake up traditional psychological, cognitive, social, and cultural divisions and encourage interdisciplinary thinking. We believe it is essential to include as wide a range of research as possible that is being conducted at a broadly construed intersection of digital technologies and literacy practices and processes. Our belief is that

the changes taking place to literacy today will require the richest possible theoretical foundations in order to understand them.

5. *The Commentary Section.* Our final section is unique. We reprint central research studies, nominated by each section's authors and selected by the editors. In addition, we have two prominent researchers provide a commentary/review of the selected work written from their particular theoretical position, each of which is quite different. We believe this provides the field with both a sense of the diverse lenses that can be brought to bear on research as well as the benefits that accrue when we do so. Such an approach is central to the process we believe will advance research in this area. It should also model for new scholars, just entering the field, the importance of bringing multiple perspectives to the study of an area as complex as new literacies research.

Acknowledgments

We want to acknowledge the generosity of all our contributing authors. We know the extent to which producing invited work adds to already demanding workloads. It is rarely, if ever, convenient to receive such invitations, let alone to accept and meet their deadlines. For this generosity we are deeply appreciative. We also want to acknowledge the leadership they provide to this emerging field.

Their research, insights, and reviews of the work being conducted in their areas are the driving force behind the rapidly emerging area of new literacies research.

In addition, we wish to thank Naomi Silverman from Lawrence Erlbaum Associates for her unstinting moral and practical support for this project. She encouraged it from the outset and helped keep us on track at crucial points along the long road to its final production. Our appreciation also goes to X, Y and Z at Erlbaum for their work at the main stages of production.

Finally, we wish to thank the colleagues commissioned by Erlbaum who each reviewed a focus article in the final section of this volume: James Paul Gee, Susan Goldman, Jim Pellegrino Peggy N. Van Meter, Carla Firetto, Bob Bleicher, David Reinking, Donna Alvermann, Richard Duran, Catherine Beavis, Colin Harrison, and Jackie Marsh. Their analytic insights and commentaries are excellent models of academic inquiry and scholarship.

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Running Head: CENTRAL ISSUES

Central Issues In New Literacies And New Literacies Research

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Central Issues In New Literacies And New Literacies Research

The Handbook of Research in New Literacies explores an increasingly urgent question for educational research: *How does the Internet, and other information and communication technologies (ICTs), alter the nature of literacy?* The answers are likely to provide some of the most important insights about our literacy lives that we may acquire during this century. The answers will also be some of the hardest to obtain, largely because we currently lack adequate theories, constructs, and methods to match the complexity of the question. This volume begins the important work required to integrate the many insights, found in multiple lines of research, so that we might explore this question in all the richness and complexity that it deserves.

We seek to advance the study of new literacies by bringing together, for the first time, research taking place around the world, in widely diverse disciplines, with even more diverse theoretical frameworks, and still more diverse epistemological approaches. Some might see this diversity as a limitation in establishing a common research base; we see it as a powerful advantage. The richness of these multiple perspectives provides us with the best opportunity to fully understand the many issues associated with the changing nature of literacy. And, we see in this understanding the best opportunity to help all individuals fully realize their potential as global citizens in the 21st century. Our goal with this volume is to begin to construct a foundation on which to begin the important

development of the theories, constructs, and methods that will allow us to more thoughtfully study the new literacies emerging with the Internet and other ICTs.

At the beginning, it is essential to acknowledge that the question framing this volume has not suddenly appeared, independent of previous work. As with any good question, this one has an important evolutionary history that should be recognized to understand both where we started and where we are headed. An early version of the question first emerged when precursors to personal computers forced us to confront the possibility that digital technologies might be as much about literacy as they are about technology (e.g., Atkinson & Hansen, 1966-67).

Following this initial work, a subsequent explosion of personal computing technologies quickly attracted the interest of scholars and researchers with interests in language and literacy. Philosophers, literary scholars, linguists, educational theorists, and educational researchers, among others, pondered the implications of the shift from page to screen for text composition and comprehension (e.g., Bolter 1991; Heim 1987; Landow 1992). They also considered the potential for linguistic theory and literacy education (e.g., Bruce & Michaels, 1987; Reinking, 1988). Questions were raised about the extent to which new technologies altered certain fundamentals of language and literacy and, if so, in what ways and with what consequences. At the same time, some questioned whether there was really anything new to the literacies required by digital technologies, or if digital technologies had simply become the latest tools

to accomplish social practices common through the centuries, including reading and writing (Cohen 1987; Cuban 1986; Hodas 1993). Was there really anything new to literacy when the tools change and we simply read and write text on a screen instead of on paper?

The Internet: Unprecedented Dimensions To Both The Speed And Scale Of Change In The Technologies Of Literacy

It is the Internet, however, that has brought unprecedented dimensions to both the speed and the scale of change in the technologies for literacy, forcing us to directly confront the issue of new literacies. No previous technology for literacy has been adopted by so many, in so many different places, in such a short period of time, with such profound consequences. No previous technology for literacy permits the immediate dissemination of even newer technologies of literacy to every person on the Internet by connecting it to a single link on a screen. And finally, no previous technology for literacy has provided access to so much information that is so useful, to so many people, in the history of the world. The sudden appearance of a new technology for literacy as powerful as the Internet has required us to look at the issue of new literacies with fresh lenses. The speed and scale of this change has been breathtaking.

Consider, for example, the speed with which usage of the Internet increases. Sometime late in 2005 an important global milestone was reached -- the one-billionth individual began reading, writing, viewing, and communicating

online (de Argaez, 2006; Internet World Stats, 2006). Approximately one-sixth of the world's population now accesses the Internet. The growth rate has been exponential; most of it having taken place in just the past five years (Evolution of Online Linguistic Populations, n.d., Internet World Stats, 2006; ClickZ, 2006). If this rate continues, almost half of the world's population will be online by 2012 and Internet access will be nearly ubiquitous sometime thereafter. You can see some of these changes in the following table, summarizing worldwide Internet usage statistics as of November 27, 2006.¹

Table 1 About Here

The usage statistics in Table 1 are far from evenly distributed by age. In countries for which reliable data are available, regardless of the number or percentage of users, Internet usage is especially widespread and regular among adolescents. In Accra, Ghana, for example, 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 the U.K, 74% of children and young people aged nine to nineteen have access to the Internet at home, and most of these (84% in all) are daily or weekly Internet users

(Livingstone & Bober, 2005). In the U.S., 87 percent of all students between the ages of 12 and 17 report using the Internet; nearly 11 million do so daily (Pew Internet and American Life Project, 2005). Similar patterns are commonly found in other nations. In short, the Internet is quickly becoming this generation's defining technology for literacy and thus, issues of new literacies will be especially important to consider in relation to our youth.

Usage statistics are also far from evenly distributed by region and country. Schools in the European Union report 96% Internet access in 2006, with broadband access the new standard. They average nearly 70% school classroom penetration, with highs of over 90% in the Nordic countries, the Netherlands, Estonia and Malta, and lows of 13-31% in Greece, Poland, Cyprus and Lithuania (Korte & Hüsing, 2006). In 2005, 99% of public K-12 schools in the U.S. had an Internet connection and 93% of all K-12 classrooms in the U.S. had Internet access (Parsad, Jones, & Greene, 2005). By contrast, only 5% of Mexican schools were estimated to have any kind of web access prior to 2004 (Cavanaugh, 2004) and only 26% of Brazil's schools had Internet access, though 67% of all secondary schools had access (INEP – EDUDATABRASIL, 2005). School access is still negligible throughout most of sub-Saharan Africa.

Table 1 points out, however, that the fastest growth rates (from 2000-2006) are taking place in regions with the lowest current access rates, regions that often possess the largest populations: Africa (625%), the Middle East (479.3%),

Latin America/Caribbean (370.7%), and Asia (231.2%). One can expect that the most rapid growth in the next decade will continue to take place in these regions that currently have some of the largest populations. Even with this growth, however, it is likely that important disparities will continue to exist between and within nations. These and many other aspects of what has come to be referred generically as the digital divide (Hargittai, 2002; Hoffman & Novak, 1998), carry with them important responsibilities for local, national, and global communities committed to egalitarian ideals. We should not think that we can study new literacies as simply a technological, linguistic, cognitive, or social phenomenon in isolation from our common commitment to one another and the consequences of our work to assist or deny full access to economic, educational, and political opportunity.

The rapid, and differential, rate at which access to the Internet is taking place is one aspect of the speed with which change is taking place in the technologies of literacy. There is also another: It is not just that a single technology of literacy has changed with the appearance of the Internet; it is that the Internet, as a technology, permits immediate, global, and continuous change to the technologies of literacy themselves. Never before has this potential existed within a central technology for literacy. The Internet, possessing within itself the potential to contribute to the continuous redefinition of literacy, has been a major

factor in making literacy deictic (Leu, 2000; Leu, Kinzer, Coiro, & Cammack, 2004).

A global network, such as the Internet, makes it possible to develop and immediately disseminate a new technology of literacy to every person who chooses to access it online. We have seen the beginning of this process recently as new technologies such as blogs, wikis, massively multiplayer online games, social networking technologies, and video and music dissemination technologies such as YouTube and Bebo have rapidly spread by means of the Internet, each with additional, new literacy forms and functions that, in turn, get reshaped by social practices. Moreover, new iterations of older technologies such as word processing software, IM software, and others may also be disseminated with a single link. Each new version of these more mature technologies also changes the forms and functions of earlier literacies since they carry within them new potentials for literacy. Literacy is no longer a static construct from the standpoint of its defining technology for the past 500 years; it has now come to mean a rapid and continuous process of change in the ways in which we read, write, view, listen, compose, and communicate information.

Thus, it may be that literacy acquisition is defined not by acquiring the ability to take advantage of the literacy potential inherent in any single, static, technology of literacy, such as traditional print technology, but rather by a larger mindset and the ability to continuously adapt to the new literacies required by the

new technologies that rapidly and continuously spread on the Internet. Moreover, since it is likely to be the case that there will be more new technologies than any single person could hope to accommodate, literacy will also include knowing how and when to make wise decisions about which technologies, and which forms and functions of literacy most support one's purposes. Finally, the notion of literacy may have to be conceived in a situationally specific fashion, since it is no longer possible for anyone to be fully literate in every technology of literacy now available on the Internet.

If literacy has become deictic, it adds a second dimension to the speed with which the technologies of literacy change on the Internet. Given the increasingly rapid appearance of continuously new technologies of literacy on the Internet, this aspect of new literacies may become more important, in the long run, than even the speed with which access to the Internet is spreading around the world. It suggests that new literacies will continuously be new, multiple, and rapidly disseminated.

Recognizing both of these dimensions, the sheer speed of take up is of particular significance for the issues in the present volume. So, too, is the global scale of take up. Both force us to confront the issue of how, why, and with what consequences new literacies are emerging as the Internet becomes an increasingly important dimension to life in the 21st century.

What Does It Mean To Be "New?"

How would we know when new literacies emerge? This issue is not as simple as it may seem, at first glance. There are a host of challenges to understand what it is about literacy that is now “new.” How would any individual recognize, for example, that new technologies require new social practices and new literacies? The combination of speed and scale we have discussed may mean that the changes have happened too quickly and across too broad a front for us to understand well and deeply what we are, collectively, “in.” For many the sheer challenge of trying to keep up with changes in new technologies is all consuming. There is seemingly little or no “space” left for trying to make sense of it. This does not apply simply to the young person or the average person in the street. It is also widespread among people throughout the world who are working in professional occupations, including teachers at all levels of formal education. For a smaller group of others who have already adapted to the literacy demands of changing technologies as a part of daily life, proficiently living each day within the cultural and literacy space that is the Internet, it may be hard to see anything “new” for just the opposite reason. How can something be seen as “new” when it is simply a facet of day-to-day existence? Yes, it may be difficult for individuals to fully recognize the existence of new literacies, even when they are using them.

Another aspect of defining “newness” is related to how one answers the question, “What precisely is literacy?” Any definition of literacy will determine whether some aspect of it is “new” or not. In the maelstrom of contemporary

change it is difficult to sort out what might be “new” in the way of literacies from what is familiar or conventional – even if one has the opportunity and motivation to reflect on the matter. From some perspectives it might all seem quite familiar – just a matter of reading and writing on screens now, rather than on paper with pens and pencils. Indeed, if your conception of literacy is tied tightly to traditional print literacies, it may seem strange to even think about many of the things some researchers want to call new literacies as being about literacy at all. Lawrence Lessig (2005), for example, talks about slices of digital animation, music, and video as the components of early 21st century literacies: the building blocks that young people use for encoding meanings (as in producing Anime-Music-Video artifacts). He argues that for young people in first world countries these units of meaning making are, to a significant extent, the equivalent to what the letters of the alphabet were for their parents’ generation.

Thus, the inclination to think of literacy in terms of “new” as distinct from conventional, traditional, or established forms may depend greatly on, for example, whether one thinks of literacy in terms of alphabetic writing, vocabulary knowledge, and recall of information, or whether one thinks of it in wider terms such as conceiving and communicating meaning presented in multiple media and modality forms, as informational problem solving, or another broader conceptualization. And even when people do think of literacies in wider terms there is ample scope for debate about what constitutes a phenomenon being

“new.” Does the established simply morph into the “new” so seamlessly that any attempt to parcel the new is arbitrary? Or can we generate principles, concepts, and supporting evidence and argument for making useful sense of “new” literacies for research purposes? These, too, are central issues in the study of new literacies.

Another issue in determining what is “new” from what is not results from the continuously changing nature of literacy. Some have questioned the usefulness of a concept such as new literacies whose referents seem to have fleeting use-by dates. This is the idea that when Instant Messaging appeared, email became an ‘old’ literacy. From this perspective new literacies are seen as having a similar kind of life trajectory to motor car models: new in 2006, semi new in 2007, and old hat by 2008.

Against this kind of perspective, many proponents of new literacies take the view that ‘new’ is not over on a “literacy by literacy basis” when MOOs give way to 3D role-playing worlds or chat palaces, or stand-alone, single player, ascii-interface video gaming gives way to online, massively distributed, three-dimension, avatar-based, multi-player collaborative gaming incorporating real-time text chat and VoIP (voice chat), and video/webcam chat. Rather, “new” literacies are identified with an epochal change in technologies and associated changes in social and cultural ways of doing things, ways of being, and ways of viewing the world (worldviews), and so on. For some, the crucial factor has been

the emergence of digital post typographic forms of inscribing language. For others the point of reference is more the emergence of a particular defining technology, like the Internet. For others again, new literacies are to be understood more generally in relation to an historical conjuncture involving changes in culture, institutions, temperaments, and mindsets, as well as in technologies (with which they are, nonetheless, closely associated). From any of these broader standpoints, it may be that “new” is not an attribute of individual forms of practice like emailing or instant messaging. However brief their moments in the sun might be, they are new in a more abiding sense of being part of a larger historical phenomenon that is not fleeting.

Responding To New Literacies: Public Policies And The Case Of Literacy Education

How should we respond to the changes taking place to literacy? Of course, we each respond individually to these changes, sometimes resisting, sometimes contributing to the redefinition of literacy through the social practices in which we individually engage. Perhaps, though, the most visible and important aspects may be seen in public policy responses to the changes taking place. Here, the record is not a very positive one. Policy makers are beginning to understand a bit of the challenge; they are not yet on their way to understanding the solutions. Ironically, most public policy responses to the Internet have typically been framed in terms of older, more traditional notions of print literacy, not from within an

understanding of the Internet itself. This may be due to the fact that policy makers are sometimes the last ones to “get” the Internet or to engage systematically and intensively in its use. One obvious case involves public policies related to literacy education. It perfectly illustrates the important need for a systematic, collective effort in new literacies research so that public policy makers can be better informed.

At least since the time that Alain Touraine (1974), Daniel Bell (1973), and Alvin Toffler (1980) articulated in their respective ways the coming of post-industrial society, it has been recognized that the changing roles and escalating scales of information and communications have seriously “upped the ante” for literacy. But just how the ante is “upped” is by no means agreed. The initial public policy response in numerous countries – typically, Anglo-American “developed” countries with significant migrant populations from non English-speaking backgrounds – was to proclaim a functional literacy crisis. This was augmented, from the 1980s to today, with calls for higher levels of literacy in the schools including reading, information literacy, computer literacy, (critical) media literacy, digital literacy and the like, often accompanied by policy initiatives, ironically, still firmly grounded in conceptions of basic print literacy.

In the U.S., for example, one response was legislation to hold states and school districts accountable for raising reading achievement (No Child Left Behind Act of 2001, 2002) and then testing students to ensure this on assessments

that had nothing to do with online reading comprehension, since not a single state measures students' ability to read and use information on the Internet (Leu, Ataya, & Coiro, 2002). Indeed, the assumption has been that online and offline reading comprehension are fully isomorphic (The New Literacies Research Team at the University of Connecticut, in press), despite evidence that online reading comprehension differs from offline reading comprehension in important ways (Coiro, 2007; Coiro & Dobler, in press; Castek, Leu, et. al, 2005). Unfortunately, the pervasive power of an assessment that only measures traditional print literacies profoundly determines what is taught during reading instruction, especially within schools that are under the greatest pressure to raise test scores. This has resulted in denying online reading experiences to students in the most economically challenged school districts.

Because of a lack of resources, and other challenges, poor urban and rural school districts have faced enormous pressure to achieve adequate yearly progress on the traditional print-based reading skills required by No Child Left Behind legislation. They have responded by focusing complete attention on the instruction of traditional, print-based reading experiences, abandoning any instruction in what is required for reading, writing, and communicating online with multiple media and technology forms. Meanwhile more affluent schools, under less pressure to raise achievement scores on measures of traditional print literacy, have been freer to begin to integrate the Internet into the curriculum.

Moreover, students in more affluent districts have far greater access to the Internet in their homes. It is the cruelest irony of this public policy that students who need to be prepared the most at school for an online age of information, those who may not have Internet access at home, are precisely those who are being prepared the least.

At a time when policy makers still think of literacy in traditional print terms and call on schools to be accountable for ensuring that all students “achieve literacy proficiency,” those who believe literacy education requires a more expansive vision are systematically disadvantaged. Overcoming this disadvantage presupposes becoming even clearer about what constitutes “new literacies” than political constituencies currently are about what constitutes conventional literacy. This is a demanding challenge, but one to which this handbook aims to contribute. Literacy practices pervade daily life. Individual pieces of research, however, can only address small portions of the total spectrum of significance. If we are to build a bigger picture of new literacies and hold it in focus, it is important to develop a conceptual framework that pulls specific components together on substantial dimensions such that parts can be seen in relation to larger wholes.

The issue is particularly acute with respect to school learning. We have already referred to the rate of take up of computer and Internet access in schools across different parts of the world. It is well known that this does not necessarily mean that students are able to engage in effective practices within formal

instructional settings. Indeed, while school access to the Internet is close to 100% in some countries it is much less frequently integrated into meaningful learning opportunities (Cuban, 2001; Madden, Ford, Miller, & Levy, 2005). While it is clear that the Internet is increasingly becoming this generation's defining technology for literacy and learning, it is equally clear that many classrooms have not yet begun integrating the Internet systematically into instruction, let alone providing opportunities for effective appropriation and extension of the kinds of new literacies the Internet invites and social practices that life beyond the school demand and celebrate. In fact, pioneering teachers who have been leading the way with respect to adopting the Internet in classrooms tend to focus on the technology aspects of use, rather than seeing the issue as an instructional issue for literacy (Karchmer, 2001).

Variations On A Theme: Defining The Construct Of New Literacies In A Manner That Advances Its Development

The previous discussion has only touched on just a few of the larger issues that we face in new literacies research: the consequences of rapid and widespread access to the Internet; defining what might be "new" about literacy within this technology; and public policy responses. Perhaps the most critical issue, however, is how should research be conceived to advance our understanding of the changes taking place in ways that are most productive?

It is clear that what is going on in the current conjuncture around changes in technologies, communications, institutions and relationships, economic life, and diverse everyday practices – including education – has generated a massive amount of research in diverse fields interfacing one way or another and more or less directly with the changing social practices of literacy brought about by the Internet. As with any newly emerging area of research, multiple theoretical perspectives have begun to appear; some more clearly formulated, others more inchoate. Scholars from numerous disciplines including cognitive science (Mayer, 2001), sociolinguistics (Cope & Kalantzis, 2003; Gee, 2003; Kress, 2003; Lemke, 1998), cultural anthropology (Markham, 1998; Hine 2000; Miller and Slater 2000; Wakeford 1999), information science (Bilal, 2000; Hirsch, 1999), law (Lessig 2005), and rhetorical studies (Andrews and Andrews 2004; Kastman Breuch 2002; Starke-Meyerring 2005), among others, have identified changes to literacy as they explore phenomena in daily life in relation to new technologies relevant to their respective areas of study. As many new heuristics appear, informing this multidisciplinary work, we are gradually seeing the beginnings of a new literacies perspective beginning to emerge. This perspective, meaning many different things to many different people, is still in its initial stages but it has the potential to become a powerful one, redefining what it means to be literate in the 21st century (e.g., Bruce

2003; Coiro & Dobler, in press; Kellner 2000; Kist 2004; Lankshear & Knobel, 2003, 2006; Leu, et. al, 2004).

A number of variations of different kinds are readily discerned within the terrain covered by the expansive concept of new literacies addressed in this book. Some of these variations are terminological. Different terms, like 21st century literacies, Internet literacies, digital literacies, new media literacies, multiliteracies, information literacy, ICT literacies, computer literacy and so on, are used to refer to phenomena we would see as falling broadly under a new literacies umbrella.

Other variations are more substantially conceptual and theoretical in nature. The 'space' of new literacies is highly contested. Some authors conceive new literacies as new social practices and conceptions of reading and writing (Street 1998) emerging with new technologies. Some see new literacies as important new strategies and dispositions required by the Internet (Leu, et. al., 2004). Others see new literacies as new Discourses (Gee, 2003) or in terms of new semiotic contexts (Kress, 2003; Lemke, 2002) made possible by new technologies. Still others see literacy as differentiating into multiliteracies (The New London Group, 1996) or multimodal contexts (Hull & Schultz, 2002) and some see a construct that juxtaposes several of these orientations (Lankshear & Knobel, 2003, 2006).

At the level of definitions, these differences support significantly different conceptions of new literacies. Some stress epistemic values concerned with producing and evaluating knowledge and information pertinent to our personal, civic and professional lives. In this vein, Leu, et. al. (2004) conceive of new literacies as allowing individuals to “...use the Internet and other ICTs to identify important questions, locate information, critically evaluate the usefulness of that information, synthesize information to answer those questions, and then communicate the answers to others’ (p. 1570) along with ten principles that define acquisition and developmental processes. Varis’ (2002) account of new literacies comprises the integration of several specific ‘literacies: technology and information literacy, media creativity, global literacy and literacy with responsibility. This account endorses the epistemic values as well as emphasizing capacity for successful cross cultural interaction and collaboration and to manage the social consequences of media with respect to safety, privacy and the like.

Other definitions attend more to producing and exchanging meanings by means of encoding and decoding symbols mediated by some technology. Gee (2007), for example, identifies video gaming as a new literacy in virtue of the ways game design involves a multimodal ‘code’ comprising images, actions, words, sounds, and movements that players interpret according to gaming conventions. Since players of real-time strategy games read a “map” as signifying a land mass they can build on in recognized ways in competition with other

builders, they can participate in the game as a form of social practice, build identities as particular kinds of strategists, and so on. Video games use new and evolving digital technologies to generate the symbols used in encoding and decoding the meanings that constitute the game.

Some definitions foreground political aspects of representations and discourses in addition to epistemic and meaning-oriented aspects. Kellner (2000), for example, construes new literacies as involving new forms of media literacy, computer literacy and multimedia literacies whose dimensions include means for enabling "...students, teachers, and citizens to discern the nature and effects of media culture..." to analyze media culture "...as products of social ... struggle..." and stress "...the importance of learning to use the media as modes of self-expression and social activism"

Approaches to new literacies reflect a wide range of specific theoretical preferences and, more generally, theoretical perspectives. For example, research focusing on multimodality as a key feature of new media texts draws heavily on theory from systemic functional linguistics (a variant of sociolinguistics) and discourse theory to develop a social semiotics for analyzing meanings. Approaches concerned with the politics of new literacies – including issues of digital divides or access and equity – often invoke variants of critical theory, but may cast their nets more widely into quite specialized domains such as branches of mathematics concerned with power law distributions (Shirky 2003). Other foci

involve recourse to sociotechnical theory, theories of the social construction of space and time, various kinds of network theories, elements of postcolonial theory, feminist theory, theories of media, informatics, communications theories, hermeneutics, theories of culture, among many others.

Such variations reflect in turn different emphases at the level of ideals, values, purposes, and projects or "agendas." Priorities and purposes evident in work across the spectrum covered by "new literacies" range across such diverse areas as promoting social justice and equity, enhancing cross cultural efficacy, lifting economic productivity, improving formal instruction, building active and informed citizenship, encouraging Internet safety and respect for property rights, and equipping Internet users to discern the quality of information and to use new technologies to present their point of view.

Notwithstanding the conceptual and theoretical richness and diversity that characterizes the field of new literacies theory and research as it has developed to date, and the important insights this work affords, we believe that there are two important limitations in extant approaches to developing a new literacies perspective. First, they do not make the Internet, and other new technologies and the social practices they enable, central to their perspective and build out from there. Rather, they bring theoretical perspectives that have been developed previously from other contexts and import them to the new technologies and new literacies landscape. We believe that the new literacies of the Internet are

sufficiently distinctive that they require their own theoretical framework – one that is grounded in the social practices of the new literacies of the Internet and other ICT and the contexts and conditions under which these social practices occur, develop and evolve – in order to adequately understand them. Rather than imposing theoretical perspectives grounded in other contexts, the Internet needs to be respected as a unique context for literacy and used to build its own theoretical foundation. The fact that these new literacies are continuously changing adds further support to this argument.

Second, theoretical orientations toward new literacies typically reflect a single tradition of inquiry: e.g., sociolinguistics, psycholinguistics, cognitive theory, or sociocultural theory, for example, and sometimes even a single theoretical perspective within that tradition. So far as developing viable approaches to teaching and learning issues within formal settings are concerned, we believe that any adequate theory of new literacies, and the research approaches that collectively contribute to theory development, must bring multiple perspectives to bear on framing the universe of new literacies. Research questions on the new literacies of the Internet and other digital technologies take place in contexts that are far too complex and rich for any single perspective to account for all that is taking place. We believe that to understand these new literacies will require us to collectively bring multiple sets of perspectives to research on new literacies. Multiple realities (Labbo & Reinking, 1999) will need to be recognized

before we are able to fully understand what new literacies are, how they come to be, and how they evolve and develop.

Where do we begin? Looking across the tremendously varied terrain in new literacies research, in work as diverse as ethnographies of cyberspace (e.g., Wittel, 2000), computer mediated communication (e.g., Kelsey & St. Amant, in press), second language research (e.g., Blake, 2000), reading research (e.g., Coiro & Dobler, in press), communications studies (e.g. Castells, 1996; Snyder, 2001), media literacy (e.g., Livingstone, 2002; Livingstone & Bober, 2005), studies of hypertext (e.g. Burbules, 1997; Mayer, 2001; Kellner, 2000), philosophy of technology (e.g., Hickman, 2001), cultural studies (e.g., Lam, 2004), literacy research (e.g., Andrews, 2004), informatics (e.g., Levy, et. al, 2003), educational technology (e.g., Jonassen, 2003), problem based learning (e.g., Lee & Kim, 2005) and many others, suggests that a narrow definition of new literacies will likely close us off to much of the energy and the rich and complex insights beginning to take place. On the other hand, failing to define, at least in general terms, what we mean by new literacies research will perpetuate unconnected lines of research and a far less productive approach. Similar to what has taken place in the open source development movement, we believe that we should seek an approach similar to what von Hippel and von Krogh (2003) refer to as the private-collective model, where everyone benefits. We need to invite everyone to the conversation in order to both define and study the construct of new literacies,

while establishing broad parameters so that people can connect their work to something specific. In this way, researchers in disparate fields can push their own understanding forward while also helping to build a common central construct as we each also inform work taking place by other scholars, in other areas, on other issues. This volume is an attempt to begin this important task of open source development, taking advantage of the richness that defines current research in a manner that enriches our understanding of new literacies and new literacies research.

This is not some wishy-washy policy of “everyone in” for its own sake. It is a policy aimed at progressively pursuing depth, rigor, and sophistication in interdisciplinary research by forging connections where connections have yet to exist, by constructing a platform together for debate and conversation about essential issues in new literacies research, and especially to create a space for exchanging ideas across traditional disciplinary borders, research communities, methodological divides, and cultural experiences from around the world.

To pursue the best views and understandings it is important for diverse options and resources to be on the table at the outset, and for critical opinion to be brought to bear on these so that productive lines of development can be nurtured in accordance with appropriate scholarly criteria and standards. These lines of development may be multiple, so long as they are robust from scholarly standpoints.

This is the philosophy we have adopted here: the pursuit of rigor rather than closure, from a position of openness to views and perspectives that share in common the wish to understand better how people encode, receive, and negotiate meanings in the current technological conjuncture.

Taking such considerations into account, both the need to provide an open context for research in new literacies as well as the need to provide some sense of an initial definition that we might all agree to, we see at least four characteristics of an emerging new literacies perspective.

First, new technologies for information and communication and new visions for their use require us to bring new potentials to literacy tasks that take place within these technologies. While they may differ on the label of the construct they use, each set of scholars would probably agree that the Internet and other new ICTs require new social practices, skills, strategies, dispositions, and/or literacies for their effective use.

Second, new literacies are central to full civic, economic, and personal participation in a world community. As a result, they become important to study so that we might provide a more appropriate education for all of our students, in all nations. Moreover, attention to digital divide issues, whether defined in terms of access to the technologies themselves, in terms of instructional equity, or in terms of access to new, democratic tools, become especially important for societies that profess themselves to be egalitarian.

Third, new literacies are deictic; they rapidly change as defining technologies change. The new literacies of the Internet and other ICTs are not just new today, they will be newer tomorrow, even newer next week, and continuously renewed on a schedule that is limited only by the human capacity to keep up. New technologies for literacy regularly appear, requiring even newer literacies to be able to use them effectively. Of course, literacy has always changed as technologies for literacy have changed (Manguel, 1994). What is historically distinctive is that by definition, the Internet permits the immediate exchange of even newer technologies of literacy. This speeds up the already rapid rate with which new technologies and new literacies appear. The process by which new literacies emerge and evolve is a transactional process (Bruce, 1997; Leu, et. al, 2004). New technologies invite experimentation to see what they can do. They get pushed into interesting places. Their limits encourage people to try and overcome these limits by modifying the technologies, and so on through endless iterations of kinds that Manuel Castells (1996) refers to in terms of a “virtuous circle.” (p. 67).

Finally, new literacies are multiple, multimodal, and multifaceted. Thus, they benefit from analysis that brings multiple points of view to understanding them. 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. This suggests that it is likely to benefit from research that draws upon

the complexity that multiple perspectives provide to studying the issue (Labbo & Reinking, 2000). It may also suggest that the area is best studied in interdisciplinary teams as questions become far too complex for the traditional single investigator model.

This volume seeks to provide initial direction for reviewing and undertaking new literacies research from the standpoint of openness that we have described. It provides a beginning base from which to encounter and approach research in this field as consumers and producers through multiple lenses and in multiple areas of investigation.

What, then, are some of the different kinds of lenses – theoretical, methodological, or issues-related – offered to readers in the rest of the book? Multiple theoretical perspectives and disciplines converge in these chapters to help us enrich our individual understandings of new literacies research. Typically, each chapter reviews research from multiple theoretical perspectives, ranging across several areas including: sociocultural theories, games studies, psycholinguistic theories, sociotechnical theories, cognitive science, sociolinguistics, cultural studies, media studies, social constructivism, social presence theory, transactional distance theory, social affordance theory, multiliteracies, multimodal design theory, radical democracy, political economy perspectives, new literacy studies, hypertext theory, intertextuality, new literacies of online reading comprehension, information literacy, media literacy, critical

literacy, critical pedagogy, cognitive science, measurement science, feminist theory, gender theory, performativity theory, activity theory, narrative theory, ethnology, diffusion theory, evidence-centered design theory, and many others. In addition, you will find a nearly equally diverse range of methodological perspectives integrated throughout the volume, covering issues in ethnographic, phenomenological, quasi-experimental, experimental, large scale surveys, mixed methods, discourse analysis, and a host of various qualitative methodologies. Perhaps the greatest range, though, is covered in the topics that are addressed. There are too many to list here, in their entirety, but separate sections cover a range of important topics in research methodologies, knowledge and inquiry, communication, popular culture, community, and citizenship, and instructional practices and assessment.

Illustrating Principles Of Open Development In Our Final Section

Our final section, *Analyses and Critiques of New Literacies Research*, seeks to show the benefits that accrue when scholars from different theoretical and methodological persuasions contribute their different analyses to a peer-reviewed, research study, itself representing different theoretical, methodological, and issues-related perspectives. Five different studies are reprinted in this section and at least two scholars, from different research traditions, share their thoughts to each study. The result helps us to appreciate the gains we can each make by thinking a bit more broadly about issues that concern us, seeing how multiple

perspectives enrich our understanding of the emerging construct of new literacies as well as how these different perspectives also enrich our own individual line of research. There is much to be gained by developing a better understanding of the many lenses that can be brought to bear on new literacies research. We seek to illustrate this in our final section.

As an example, consider the first study in this section, “Savannah: Mobile gaming and learning?” (Facer, Joiner, Stanton, Reid, Hull, & Kirk, 2004). This study draws on research and theory employed in developing simulation games, computer-assisted learning, and learning theory more generally to report the trialing of a mobile technology-based (PDAs) game involving children 11-12 years old. It is responded to from a perspective informed by sociolinguistics, cognitive science, sociocultural theory and games theory by James Gee and from a perspective informed by cognitive psychology, psycholinguistics, and learning sciences by Susan Goldman and Jim Pellegrino. This mini forum illustrates as richly as any the fruitfulness of the approach taken to conceptualizing the nature and scope of new literacies research in this volume as a whole.

Gee responds to the paper from an account of typical learning principles that are embedded in good video games, derived from a kind of ‘reverse engineering’ analysis of successful games. He discusses how and where Savannah did and did not employ learning features associated with good games, paying particular reference to games as systems of rules that are related one way or

another to content of one kind or another. He identifies points at which the game worked well from a school learning perspective, and points where it did not work so well, and explains these in terms of the relationship between the relationship between the content of the game and the game as a rule system, as well as the concept of game as contexts for building a social and learning system around them. His analysis and critique lead him to conclude that "...in the end [Savannah] leaned too far towards school and not far enough towards solid gaming and, in the act, ironically, did not facilitate as deep a learning as it might have." (xxx)

Goldman and Pellegrino draw on their experiences as journal editors as well as on their extensive background in cognitive psychology, psycholinguistics, and learning sciences to discuss a range of topics associated with the paper. Like Gee, they address games as rule systems and attend to the match between the rules of the game and real world circumstances, and raise issues about the use of games to try and teach traditional classroom subject matter. Their arguments here are used to distinguish between two quite different approaches to understanding games in relation to learning, and to acting on such understanding. They also observe a significant tension between the identities demanded by the game world and the world of school learning. In addition, they raise diverse points related to the paper as a research report, such as a lack of clarity about the project's learning goals and what would count as evidence and assessment criteria for them, the

failure to corroborate some important claims, and the failure to explain how data were analyzed and conclusions validated.

The discussion of “Savannah” is an example of the benefits that accrue when leading scholars, from very different perspectives, but with academic interests in the broad area of new literacies share their different perspectives over a common study. What we get is a degree of overlap in the discussion of some topics, as well as lines of analysis and critique that branch out in different directions. For example, where Gee takes up in some depth the theme of learning and social systems developing around games, Goldman and Pellegrino take up issues about the conduct and reporting of empirical research in relation to learning outcomes. Gee stays close to the learning features of good games and takes “Savannah” as a point of reference for where the game succeeds, where it does not, and how we can understand this in educational terms. Goldman and Pellegrino take the “Savannah” report as a case from which to identify some of the kinds of questions ‘design and development research need to address if it is going to have any impact on children’s learning, use of such technologies for content, especially science, learning, and more widespread impact’ (p. xxx). These differences in emphasis are richly complementary. They open up considerably wider vistas on educational gaming than either perspective alone could hope to provide. And where the two responses share common ground the similarities are sometimes striking.

The Journey Ahead Of Us

Many handbooks of research seek to summarize existing research and provide answers to a single field. Within *The Handbook of Research on New Literacies* you will, of course, find summaries and conclusions in each of the chapters. Most importantly, however, we seek to bring diverse fields and lines of research together so that we might each become better informed about research taking place in other areas, with other theoretical lenses, and other methodological approaches. Thus, the real purpose of this Handbook is to help us to frame better questions, ones that take advantage of the research that others, outside of our own individual areas, are conducting. If we manage to expose you to new literacies research taking place from alternative perspectives, helping to better inform your own work in this area, we will have succeeded.

The Handbook of Research on New Literacies brings together a rich sampling of the research taking place on the changes to literacy during the initial stages of a profound transformation. We believe it will add to our understanding of how the Internet and other technologies alter the nature of literacy, making possible new literacies that will define our worlds in the years ahead. We do not pretend to suggest that we have included all areas of research, nor all perspectives, though we have done our utmost to include those we have found to be especially informative.

We hope our decisions will provide you with a richer, more complex understanding of the important work that is taking place around the world on an issue of critical importance to our future. Developing a richer understanding of the ways in which literacy is changing with the Internet is likely to open doors to a more thoughtful world that takes greater advantage of the diversity that defines us -- for research, for public policy, and most importantly, for our children.

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*Table 1**World Internet Usage and Population Statistics**Adapted from Internet World Stats (2006)*

World Regions	Population (2006 est.)	Population % of the World	Internet Usage	% Population (Penetration)	Usage: % of the World	Usage Growth 2000-2006
Africa	915,210,928	14.1%	32,765,700	3.6%	3.0%	625.8%
Asia	3,667,774,066	56.4%	378,593,457	10.3%	35.2%	231.2%
Europe	807,289,020	12.4%	311,406,751	38.6%	28.9%	196.3%
Middle East	190,084,161	2.9%	19,028,400	10.0%	1.8%	479.3%
North America	331,473,276	5.1%	231,001,921	69.7%	21.5%	113.7%
Latin America/ Caribbean	553,908,632	8.5%	85,042,986	15.4%	7.9%	370.7%
Oceania/ Australia	33,956,977	0.5%	18,364,772	54.1%	1.7%	141.0%
WORLD TOTAL	6,499,697,060	100.0%	1,076,203,987	16.6%	100%	198/1%

Notes

¹These data also perfectly illustrate an important challenge to traditional print technologies thrown down by the Internet: The data in Table 1 will have profoundly changed by the time that traditional print technologies, used to produce the handbook, make them available to you. In a world of continual change, speed counts in important ways and the Internet provides access to the latest data far faster than traditional print technologies could ever hope to accomplish. It is an important advantage that the Internet possesses and one of the reasons that access rates, around the world, increase on an exponential basis and why traditional print technologies are under such pressure.