View metadata, citation and similar papers at core.ac.uk

brought to you by CORE

provided by NSU Works

NSU NOVA SOUTHEASTERN UNIVERSITY Abraham S. Fischler School of Education

Innovate: Journal of Online Education

Volume 1
Issue 3 *February/March 2005*

Article 2

3-1-2005

Twenty-first Century Literacy and Technology in K-8 Classrooms

June Brown

Jan Bryan

Ted Brown

Follow this and additional works at: http://nsuworks.nova.edu/innovate

 Part of the Education Commons

Recommended APA Citation

Brown, June; Bryan, Jan; and Brown, Ted (2005) "Twenty-first Century Literacy and Technology in K-8 Classrooms ," *Innovate: Journal of Online Education*: Vol. 1: Iss. 3, Article 2.
Available at: http://nsuworks.nova.edu/innovate/vol1/iss3/2

This Article is brought to you for free and open access by the Abraham S. Fischler College of Education at NSUWorks. It has been accepted for inclusion in Innovate: Journal of Online Education by an authorized administrator of NSUWorks. For more information, please contact nsuworks@nova.edu.

Twenty-first Century Literacy and Technology in K-8 Classrooms

All exhibits, tables and figures that have remained available have been included as additional content with their respective articles to be downloaded separately. Click here to return to the article page on NSUWorks and view the supplemental files.

Unfortunately, not all the supplemental files have survived until 2015 and some will be missing from the article pages. If you are an author in Innovate and would like to have your supplemental content included, please email the NSUWorks repository administrator at nsuworks@nova.edu.

This article is available in Innovate: Journal of Online Education: http://nsuworks.nova.edu/innovate/vol1/iss3/2

Twenty-first Century Literacy and Technology in K-8 Classrooms

by June Brown, Jan Bryan, and Ted Brown

Using technology to enhance literacy has been viewed in different ways by educators. Some teachers believe that new developments will fundamentally change literacy instruction; others think that technology is simply a new tool to use with old teaching methods. The latter group views technology as merely another example of the education pendulum swinging back and forth—but rarely creating new tracks. Likewise, some researchers claim that technology essentially redefines literacy while others believe that it acts as a vehicle to restore established concepts of literacy (Bryan, Merchant, and Cramer 1999).

The question of how new technologies impact literacy instruction in K-8 classrooms is particularly significant today. Historically, definitions of literacy were grounded in ancient Greek tradition, in which like-minded teachers and scholars gathered as *communities of literates* to share oral and written discourse and explore topics for further study (Heath 1991). For example, Aristotle taught by asking questions and having learners share their knowledge orally in the absence of technology tools. Similarly, in America early educators in one-room schools challenged learners to read, write, and recite memorized passages orally.

In recent years, however, new literacies have emerged in association with technology. Gilster (1997) defines *digital literacy* as the ability to communicate with an ever-expanding community to discuss issues, gather information, and seek help. Likewise, *global literacy* is the capacity to read, interpret, respond, and contextualize messages from a global perspective (Burniske 2000). Additional literacies include *technology literacy*, *visual literacy*, and *information literacy* (Smolin and Lawless 2003). The concept of literacy clearly has become more differentiated and more expansive in the wake of the technological revolution. As a result, Leu states that literacy is "no longer an end point to be achieved but rather a process of continuously learning how to be literate" (2001, 568). He claims that literacy is constantly changing, not static, and that teachers also must change in order to prepare children for increased technology demands.

In the midst of this new environment, many teachers are adopting newer literacy models for classroom instruction. Technology offers exciting latitude for dialogue in cyberspace, which in many respects reinforces the classical notion of literacy introduced by the Greeks—sharing knowledge with others. But instead of interacting with classmates in real time, children can now establish "communities of literates" with anyone, anytime, anywhere. This community-based model of education, along with the multiple forms of literacy that sustain it, provides a foundation for preparing students to succeed in an increasingly interdependent, global landscape. This article explores 21st-century literacy and offers some illustrations of how technology may help educators and students meet the challenges of the future while also expanding the classical ideal of literacy inherited from the past.

Industrialization, Information Management, and Digital Communities

At the beginning of the 20th century, our culture shifted from an agrarian-based to an industrialized society with technology acting as a major catalyst for change. Following World War II, information technology provided the power to manage literally millions of numbers in a split second. In turn, when computers eventually entered K-8 classrooms, educators focused on the technology itself with little thought to any broader changes in their pedagogy (Dwyer, Ringstaff, and Sandholtz 1991).

During the early years of the information age, the role of technology in education was still based on administrative or business-oriented models. As a result, teachers used computers primarily as data-management tools to handle grades, track attendance, and scan computerized tests. Particularly in

elementary schools, electronic worksheets provided literacy drill and practice for students, and competition-focused programs facilitated individual literacy attainment. Children operated computers in multistation labs and were isolated by headphones and preprogrammed instruction. They also participated in segmented literacy activities (such as matching initial, medial, and final consonants) or read books followed by objective tests. Single computers served as learning centers and electronically rewarded children who finished traditional paper-and-pencil tasks quickly. In other words, teachers and children simply did old things in new ways without grasping the value of technology as a new communication tool. Although technology changed the classroom environment to some degree, curriculum and instruction did not change.

By the late 20th century, however, the technology paradigm moved beyond data management to include networking across virtual environments (Davis and Meyer 1998). Similarly, classroom learning shifted from the traditional behavioral perspective to a constructivist approach (Anderson and Speck 2001). Perhaps the most pervasive impact of this change is reflected in how K-8 teachers and students use multimedia resources to develop literacy skills. Instead of merely *consuming content*, teachers and children have become *content creators*.

In the new connected paradigm, teachers harness the power of computers as communication tools for students to access information and share findings with others. Thus computers are no longer merely vehicles for drill and practice, but vehicles for problem-solving and active learning. This modification requires new understandings of the various ways learners interact with digital media, as well as increased opportunities for learners to participate within a growing community of literates. When teachers interact differently with technology, students' interactions change also. As Selfe and Hilligoss presciently argued more than 10 years ago, "It is not simply that the tools of literacy have changed; the nature of texts, of language, of literacy itself is undergoing crucial transformations" (1994, 11).

Literacy in a Digital World

While teachers lead the way, technology supports powerful literacy instruction and offers multiple opportunities to collaborate with more knowledgeable learners. Just as the scholars in ancient Greece shared new understandings, contemporary children converse with peers and learners around the world. The following story illustrates how a middle school student cultivated literacy skills with the added feature of technology.

Rebecca's Story

Rebecca, a Texas sixth grader, needed data—lots of data. To learn more about the 1970s she had to interview 10 people from different age groups and learn how perceptions of that decade vary. The very nature of this assignment was grounded in concepts related to digital literacy. While more traditional tasks might have engaged her in reading and responding to informative text, this assignment required her to collect and analyze unique data, thereby creating her own content.

Rebecca used oral interviews and traditional pencil-and-paper media to collect data from peers and her immediate family. To reach those geographically removed, Rebecca developed an e-mail group, transformed the oral interview into an online questionnaire, and sent her assignment through cyberspace. Within minutes, Rebecca received a response from Alabama. Data arrived at an alarming speed. To manage the information flow, Rebecca launched a spreadsheet application and entered her original pencil-and-paper data along with her electronic data. Patterns developed. Trends emerged.

Finally, Rebecca developed an oral presentation to tell others what she had learned about the 70s. Deeply engaged in 21st-century digital literacy behaviors, Rebecca accessed, manipulated, and shared information with a community of learners. As a result, she addressed content and communication simultaneously. This is a hallmark of literacy instruction in our connected society, and it ironically echoes its classical roots: To be

completely literate is to *share* what you learn.

Literacy and Technology in the 21st Century

In response to the new demands of the information age, teachers now integrate technology across the curriculum. Traditional literacy instruction involved the use of textbooks, skills lessons, ability groups, numerous worksheets and workbook pages, as well as writing that only the teacher read. In contrast, literacy in the 21st century requires that children not only communicate with classroom peers, but also read e-books, receive and send e-mail, locate and evaluate online information, prepare reports with presentation software, establish dialogue with learned individuals in other regions, and write for both a local and global community.

Teachers and children in 21st-century classrooms are responding positively to new technology tools. One new resource to enhance literacy is ePALS, which provides student-safe e-mail and easy-to-use tools. Students can connect with peers from around the world, engage in projects, create new friendships, and learn more about other cultures. In addition, *Time* for Kids Online, National Geographic, and OWL are digital magazines that allow children to access information, read about current events, take polls, play games, and in some cases submit articles for publication. Teachers can also encourage reading and writing through Web sites such as ReadWriteThink (a high-quality collection of literacy resources); Puzzlemaker (a repository of puzzles and platform for creating them); and Giggle Poetry (a publisher of children's poetry). Additional resources like Carol Hurst's Children's Literature Site, the Children's Literature Web Guide, and the Children's Book Council provide educators with book reviews and activities to enhance literacy learning.

Technology promotes literacy by allowing students to present and reconfigure information in numerous ways—such as visually through images as well as nonlinearly (Smolin and Lawless 2003). Inspiration software and the California school system's online graphic organizers are two examples of programs that facilitate visual thinking. New tools like these help teachers and learners discuss concepts, organize information, and share thoughts through Venn diagrams, semantic webs, charts, and other graphic images. Additionally, teachers and children can view story videos online, perform in a reader's theater, visit digital libraries, learn about authors, and access booktalks. Teachers may also view sites such as CyberGuides for standards-based, Web-delivered literature units.

The digital, connected community greatly impacts literacy learning in K-8 classrooms as more and more information is stored online. Consequently, instead of spending time in libraries preparing endless note cards, students use numerous online tools to search for information or collect data. Ask Jeeves for Kids, Yahooligans!, and KidsClick! are popular search engines expressly designed for children.

Formerly, children sought most of their information from parents and teachers; today students spend twice as much time learning from media resources each year (Quesada and Summers 1998). Therefore, children must be taught to search and analyze Web-based information for accuracy, bias, usefulness, and truthful content. To check for messenger bias, students can analyze the links to and from a selected Web site. For example, children can access AltaVista and enter "link:" in the search box followed by the URL. Thus, to check for bias at SeaWorld, learners would enter "link: http://www.seaworld.org/" and click the "find" icon to discover any bias or connections.

Furthermore, children can compare and contrast information from different Web sites by creating a Venn diagram with online tools. The Internet can either reveal factual, substantive information for students or become "a gigantic electronic tabloid" (Goldsborough 1998, 32). Appropriate technology use offers teachers and learners new avenues to access, evaluate, and communicate information. Heath's (1991) community of literates now expands to include a worldwide community of children.

Conclusion

The role that technology plays in advancing multiple literacies in the information age is extensive, and this

applies as much to K-8 education as it does to higher education. For younger students, technology provides vital opportunities to capitalize on real-life activities, problem-solving skills, and authentic literacy conversations with other learners. Consequently, these students can both consume and create content in preparation for their future in a connected society.

We predict that Web-based, student-centered sites will increase and expand. Children will conduct research, visit museums, and take virtual tours that were previously inaccessible due to constraints of time and distance (e.g., they might connect to the Smithsonian, the Monterey Bay Aquarium, the Louvre Museum, or the National Zoo). They will "frolic in both real and electronic parks" (Sylwester 1997). In turn, teachers will have educational resources, literacy lessons, and online journals at their fingertips (e.g., A to Z Teacher Stuff, Education World, the Global Schoolhouse, Reading Online, and journal lists like the one compiled by the University of Glasgow).

In light of current developments in online learning, it is clear that "what it means to be literate will continuously change as new technologies of literacy rapidly appear in an age of information, creating both new opportunities and new challenges for literacy educators" (Leu 2001, 568). The education pendulum continues to swing. Technology, however, leads the way in creating new tracks for the pendulum as it expands the Greek community of literates to include a global network of lifelong learners.

References

Anderson, R. S., and B. W. Speck. 2001. *Using technology in K-8 literacy classrooms*. New Jersey: Prentice Hall.

Bryan, J. K., C. Merchant, and K. Cramer. 1999. America calls: Technology-based interdisciplinary planning and instruction. *Classroom Leadership Online* 2 (5). http://www.ascd.org/ed_topics/cl199902_bryan.html (accessed February 1, 2005).

Burniske, R. W. 2000. *Literacy in the cyberage*. Arlington Heights, IL: Skylight Training and Publishing Company.

Davis, S., and C. Meyer. 1998. *Blur: The speed of change in the connected economy*. New York: Warner Books.

Dwyer, D. C., C. Ringstaff, and J. H. Sandholtz. 1991. Changes in teachers' beliefs and practices in technology-rich classrooms. *Educational Leadership* 48 (8): 45-52.

Gilster, P. 1997. *Digital literacy*. New York: Wiley Computer Publishing.

Goldsborough, R. 1998. Teaching healthy skepticism about information on the Internet. *Technology and Learning* 18 (5): 32.

Heath, S. B. 1991. The sense of being literate: Historical and cross-cultural features. In *Handbook of reading research*, ed. R. Barr, M. Kamil, P. B. Mosenthal, and P. D. Pearson, 3-25. White Plains, NY: Longman.

Leu, D. 2001. Emerging literacy on the Internet. *The Reading Teacher* 54 (6): 568-572.

Quesada, A., and S. Summers. 1998. Literacy in the cyber age: Teaching kids to be media savvy. *Technology and Learning* 18 (5): 30-36.

Selfe, C. L., and S. Hilligoss, eds. 1994. *Literacy and computers: The complications of teaching and learning with technology*. New York: Modern Language Association.

Smolin, L., and K. Lawless. 2003. Becoming literate in the technological age: New responsibilities and tools for teachers. *The Reading Teacher* 56 (6): 570-577.

Sylwester, R. 1997. *How natural and electronic environments affect the development of a child's brain*. Paper presented at Literacy Conference, Drury University, Springfield, MO, December.

COPYRIGHT AND CITATION INFORMATION FOR THIS ARTICLE

This article may be reproduced and distributed for educational purposes if the following attribution is included in the document:

Note: This article was originally published in *Innovate* (http://www.innovateonline.info/) as: Brown, J., J. Bryan, and T. Brown. 2005. Twenty-first century literacy and technology in K-8 classrooms. *Innovate* 1 (3). http://www.innovateonline.info/index.php?view=article&id=17 (accessed April 24, 2008). The article is reprinted here with permission of the publisher, The Fischler School of Education and Human Services at Nova Southeastern University.

To find related articles, view the webcast, or comment publically on this article in the discussion forums, please go to http://www.innovateonline.info/index.php?view=article&id=17 and select the appropriate function from the sidebar.