

Warschauer, Mark. (2006). *Laptops and Literacy: Learning in the Wireless Classroom*. New York: Teachers College Press. ISBN 13: 978-0-8077-4726-1 (paper) ISBN 13: 978-0-8077-4727-8 (cloth)

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In the preface of the book, Warschauer states the following questions that need to be answered, thus the purpose of this book:

1. What happens when one of the most disruptive technologies of communalization in history is placed in the hands of every student in a classroom, grade, or school?
2. When the irresistible force meets the immovable object?
3. How do students' literacy practices in school change, or not change, when every student throughout the school day has a mobile personal computer wirelessly connected to the Internet?

Before a person can write about any subject, he/she first needs to define it. That is what Warschauer does in the first chapter. He begins by giving a condensed definition of *literacy* (2): break the code, participate in the meanings of text, use texts functionally, and critically analyze and transform texts. He then discusses *academic literacy* which refers to individual's practices and competencies to succeed in academic work. Next, *digital literacies* are defined. *Computer literacy* refers to the ability to navigate a computer comfortably. *Information literacy* is the ability to know the amount of information needed, access that information, assimilate the information and organize it for the audience, understanding the ethical and legal issues involved. The ability to interpret and create products using digitized resources, including texts, typography, images, sounds, and video refer to *multimedia literacy*. Computer-mediated communication literacy (CMC literacy) is simply the interpretation and writing skills needed to communicate effectively via online media. He states that society is not facing a literacy crisis, citing Quillan (1998) pointing out reading levels of children being as good as or better than previous testing. But just because society is not facing a literacy crisis, that does not mean that society is not facing a literacy challenge! He delicately brings out a shift from the past work force (manufacturing, agriculture and mining) to the new economy requiring more diverse and exacting forms of literacy. It is particularly pertinent in the discussion of the millennial generation having grown up with a computer and these new technologies. He continues to establish the *challenges* by discussing the socioeconomic developments of the past few decades. The ending argument, leading to the rest of the book, purports technology in schools helps equalize the economic challenges and help with the new skill challenges.

Warschauer describes the study that comprises his book. He conducted a two-year laptop and literacy study at the University of California, Irvine (UCI) from 2003-2005. The method of research was creating a general case study environment that calls for intensive examination of particular cases. Ten schools participated in the study from two vastly different states, California and Maine. A vast diversity of school representation was used in the study to gain as broad a representation of laptop programs as possible. The ethnic makeup of the schools varied widely with Caucasians, Latinos, Asians and Asian Americans, and African Americans. Most of the schools in the study have integrated laptops into the general education area but a few only used

the laptops with special populations (at-risk or gifted students). Data was analyzed through standard qualitative methods.

The rest of the book includes discussion of Warschauer's findings along with other research that has been conducted in this area. He first discussed the "traditional" literacies of reading and writing. Here the reader is made aware of what is called the *fourth grade slump* (Chall, Jacobs, & Baldwin, 1990). This is where reading scores of low-SES student drop from fourth grade on. Warschauer points out that the fourth grade represents a critical point in learning. Here a child must make the transition from *learning to read* to *reading to learn* (Chall, 1996). He goes on to point out some very interesting methods that teachers used to help students in reading to learn. For example, one teacher had students conduct an information-seeking activity known as WebQuests (Dodge, 2005) that prepares the students to read. This activity had a dual purpose: providing background knowledge for upcoming assignments and simultaneously developing different kinds of reading skills and strategies. Another activity was used to strengthen the reading-writing connection. First, students read books that talked about the history of origami and how to make paper cranes. The students improved their ability by reading and following instructions to make their own paper crane. They then designed their own origami, writing instructions on how to make them while taking pictures along the way to help illustrate the process. This helped students focus on instructional vocabulary and syntax along with furthering their academic language proficiency. The students then conducted book reviews by going to Amazon.com and critiquing customer reviews of the books they read. In their own reviews of the books, students took special note of grammatical or spelling errors. These reviews were saved on the school server where the teacher accessed them, making comments and suggestions using the comment feature of Microsoft Word. The students then retrieved the corrected papers on the server, rewrote the reviews and submitted them to Amazon.com where, in a couple of days, they found their reviews published. Warschauer uses this example among others to explain how the use of laptops in the classroom improve students' reading skills.

Warschauer ends this chapter by discussing how software on the laptops is utilized to help reading skills. Pointing out that student involvement is one of the critical factors leading to success in reading; Warschauer discusses how laptops help engage students in reading, thus students developing a different type of literacy skill known as *performative* and *epistemic*. Although he points out that the teachers discussed in the chapter would try to promote epistemic and performative skills without laptops, the use of laptops in a one-to-one classroom lends itself to activities promoting these skills by being able to access online content and to acclimate students to diverse writing, analysis, and media-production software and where students can explore topics in more depth. "Page to screen" is another instructional pattern noted in laptop classrooms. Online reading skills were learned. These skills were transferred to offline reading. Another point was students knowing how to interpret the relationship between textual and audiovisual media, navigate hypertextual material, and effectively use online reference tools are all valuable reading skills for the 21st century. But these are not likely to help students on current versions of standardized tests. That explains why the physical books in the classrooms and library are also encouraged. It is pointed out that administrators and teachers should not have a laptop program just to raise reading test scores. But the author quickly points out that even though the laptop programs have not raised reading scores, scores have also not declined.

Writing is the second “traditional” literacy. Warschauer first discusses the four stages of the writing process: prewriting, writing drafts, rewriting, and dissemination. The reader can understand that children would find it easier and more enjoyable to write by computer than by hand. However, Warschauer states that children write longer papers on laptops. Another point made in using laptops in writing are the various scaffolding tools available in word process software and on the Internet (spell check, grammar check, dictionaries and thesauruses). While several teachers are allowing students to use these tools in assignments and even tests, not everyone is jumping on the bandwagon. Some believe this is making students “lazy” when they overly rely on such “crutches”. But it is also pointed out that these skills are necessary for the 21st century workforce. Warschauer points out that the daily use of laptops in the wireless classroom had a major effect on instruction at each stage of the writing process. In fact, writing not only improved in quality, but writing became more autonomous.

Advantages for using computers in teaching writing skills are so compelling that many teachers in K-12 schools are trying them, even if it means rotating students to a few computers in the back of the room. When students have their own laptops, writing can be integrated easier into instruction. With laptops available for every student, writing becomes more iterative. Students are able to plan their writing, gather diverse information and resources, review and revise their writing before dissemination or publishing it. Access to technology only helps students through this process. It also helps writing to become more public, visible and collaborative. One teacher commented that the type of collaboration occurring in the laptop classroom would not happen in a typical classroom. Laptop programs also allowed students to write in a greater diversity of genres and formats. For instance, one teacher has students read Thomas Paine’s *Common Sense* and then write their own pamphlet about conditions in their school. Another class used an interactive website to learn and create haiku poetry. Students produced higher quality in written assignments in laptop programs. Three main factors contribute to this higher quality: support tools (including spell and grammar checkers, thesauruses, dictionaries, etc.), feedback and revision (due to increased readability by teachers and peers or by computer-generated feedback), and formatting (making documents look clean, neat and professional). Warschauer claims that writing was an area that students benefited more from by having and using a laptop. Again, as in reading, writing scores did not improve in laptop classrooms. One needs to understand that authentic writing in today’s world is dramatically different than the traditional paper and pen assignment. Laptop classrooms can help students better prepare for that type of work place that they will be facing when they enter it.

In chapter five, Warschauer discusses information and the search of that information by students using laptops in the classroom. The premise lies on the prevalence of information in our society. In the past, children were given information that had been passed by editors/publishers who decided what was worthy of being printed followed by librarians, parents, or other gatekeepers who decided what printed material should be made accessible. Today, information is available online that is not touched by either of these filters. Warschauer points out that with this unfiltered information and the growing importance of being able to work with information to create knowledge, it is important to emphasize information literacy skills. Warschauer discusses two broad comparisons: taking the laptop schools as a group and discussing how information literacy skills differ from those in a traditional classroom and comparing different laptop schools

to show how different contexts and approaches are used to promote information literacy and research skills. It was interesting how just-in-time learning was occurring with laptop classrooms. The teachers called it “teachable moments.” Teachers also pointed out that the vast amount of information available online made individualized instruction easier. Of course, the ease finding information online creates unique challenges. Students need to learn how to sort through, select, evaluate, and make use of the information. Some schools developed information literacy models in which students were instructed. Teachers also came up with various strategies to help deter plagiarism. Warschauer illustrates that another opportunity that laptop programs provide students is being able to work directly with data. Gathering and analyzing data, students participate in more direct forms of experimentation and research. Finally, many teachers pointed out how they believed the laptops contributed to more in-depth learning. For example, 90% of teachers agreed that “students in laptop programs explore topics in more depth” and 85% expressed agreement with “students in laptop classes get more involved in in-depth research” (p. 92). These pedagogical changes are worth noting when considering laptop programs.

Chapter six of *Laptops and Literacy* features how technology promotes changes in literacy. For instance, the development of writing undermined the oral literacies of reciting and listening to epic poetry, and the printing press replaced the literacies involved in copying or reading manuscripts aloud. Technology has also lead to new forms of literacy in studying published texts. No doubt that the rise of information and communication technologies will have a similar impact on literacy practices in our society. Warschauer points out three important reasons to introduce multimedia production in schools: multimedia literacy, knowledge representation, and student engagement. Multimedia literacy refers to a set of skills a person needs to interpret and create products or messages that make use of images, photographs, video, animation, music, sounds, and typography. In the 21st century, multimedia literacy is important for occupational purposes, civic purposes, and artistic purposes. Knowledge representation is the power of multimedia to organize, interpret and construe experience and information. Student engagement is enhanced by teachers being able to create media rich learning in the classroom. Movie trailers, digital stories, and digital photography are all discussed showing how teachers use them to engage students in learning.

Warschauer continues his exploration with a discussion on the definition of successful students and how learners’ experiences in one-to-one laptop programs influenced their development. He discusses three areas (engagement, study habits, and inventive thinking), providing examples of very different approaches toward developing habits of mind. Speaking of engagement, Warschauer focuses on what educational psychologists have recognized as the three principal types of engagement: emotional, behavioral, and cognitive. Emotional engagement refers to students’ affective reactions in the classroom (interest, happiness, enthusiasm, etc.). Behavioral engagement considers positive conduct (following rules, adhering to classroom norms, etc.) as well as the absence of disruptive behaviors (skipping school, getting into trouble). Cognitive engagement refers to students’ investment in, along with efforts directed toward, learning, understanding, and mastering knowledge and skills.

Warschauer points out prior studies reporting increased student engagement with laptops that was confirmed in his research. Seventy-three percent of students indicated that school was more interesting since using laptops and 77% of teachers reported higher student interest. Warschauer

notes experiences of students rushing in and opening their laptops before class began or returning early from lunch to begin working on a project. But he also points out that without proper supervision and direction, student disengagement occurred rather than engagement. At one particular school when laptops were not managed properly, students sending instant-messages, surfed the web for personal information, and engaged in non-academic activities. It is important to remember that while one-to-one laptop programs can make a school better, it will not fundamentally alter a school with problems.

In the final chapter, Warschauer discusses three main literacy challenges facing U.S. schools labeling them past and future, home and school, rich and poor. In “past and future” he combines what was learned in the area of ‘traditional literacies’ (reading and writing) and ‘new literacies’ (information literacy and multimedia production). Preparing students better for the future is probably the single greatest benefit of laptop programs. In “home and school”, Warschauer points out to his own experience in integrating home and office computing and how taking a laptop from work to home is much “smoother” in continuing projects. It was no surprise to find that students found that the use of a laptop helps overcome the home-school divide. The gap between “rich and poor” was harder to overcome than the previous areas discussed. Warschauer points out how one-on-one laptops were used to engage students in low-SES schools and illustrated examples of how administrators and teachers were using them to help students learn. However, Warschauer points out that educational technology programs will never overcome the broader social and economic divisions that lead to educational inequity in our society. He concludes this chapter and the book using the metaphors of word and world. He points out that laptops are a powerful tool to help learners understand and work with text. Laptop computers are also a powerful tool for bringing the “world” into the classroom while contextualizing literacy practices.

All in all, *Laptops and Literacy* is an important reference for those contemplating using laptop computers in the classroom. Since one-on-one laptop programs become adopted by more and more campuses, *Laptops and Literacy: Learning in the Wireless Classroom* can be of assistance for educators and administrators alike, an in-depth look at the ins and outs of this current phenomenon. Highlighting creative thinking and diverse application realms for interaction, the book assists teachers contemplating the use of laptops in the classroom to use examples from many different contextual areas. It also provides a large range of exemplifications to support educational goals linked to the promotion of technology in schools, goals needed to equalize economic and new skills challenges for student generations to come.