

---

# Reading on the Web: Making the Most of Digital Text

Lynne Anderson-Inman, Ph.D

College of Education  
University of Oregon

The World Wide Web contains an increasingly diverse array of reading materials appropriate for K-12 students. Making the most of these digital texts, however, requires knowing what to look for, and choosing materials to support teacher and student in ways that enhance both literacy and learning. It has become increasingly common for websites to offer educationally useful reading materials and to support these materials with electronic enhancements that go beyond the basic text. These enhancements can make a world of difference in how well the digital text aligns with a teacher's curriculum and how well the student comprehends what is written.

In this article, we describe the types of support that teachers can look for when choosing web-based materials for their students to read, and we show how these types of support have been integrated into a sample digital text available on the Internet. In addition, we provide suggestions for finding digital texts on the Web and using them in ways that enhance curriculum goals and meet students' needs.

## Supported Text

The concept of "supported text" was developed by Anderson-Inman and Horney (1997; 1998) to describe electronic text that is modified or enhanced in ways that support student comprehension and extend student learning. The underlying notion is that digital text (e.g., a word, phrase, paragraph, page, or document) can be linked to additional text or other types of media in ways that promote better understanding of what the author wrote. In addition, the concept assumes that digital text can be structurally presented or organized in ways that facilitate the accomplish-

ment of instructional objectives. In earlier publications Anderson-Inman and Horney (1998; 1999) describe eight different types of supportive resources that can be used to make the process of reading a specific text easier or more educationally sound. Unlike previous typologies, the resources in this list do not focus on what media is being used to modify or enhance the digital text, but rather what function the supportive resource plays in the reading process. Any specific type of resource could be implemented in a variety of different ways, using any number of different media.

Below is an updated and modified version of this list, which now includes nine types of supportive resources:

- 1. Presentational Resource:** Presentational resources allow the text to be presented in a way that is most effective for individual readers. Options that facilitate selecting a specific font style and size, or a specific background color are examples of presentational resources. Another type of presentational resource is one that allows a specified amount of text (e.g., paragraph versus chapter) to appear on the screen at any given time.
- 2. Navigational Resource:** Navigational resources provide the reader with easy movement from one part of a document to another part, or from one document to another document. For example, links that take a reader to a document's table of contents, glossary, or bibliography serve to facilitate nonlinear navigation within a document. Intertextual links (i.e. ones that take the reader to a specific location in a related document) are also navigational resources.

- 
3. **Translational Resource:** Translational resources provide a reader with a familiar or more understandable version of a word, phrase, or paragraph that is difficult to comprehend. Examples include providing a definition for an unfamiliar word, providing the text in another language (e.g. Spanish for English), or enabling use of another medium (e.g., synthesized or digitized speech for print). Simplified explanations are also translational resources.
  4. **Illustrative Resource:** Illustrative resources provide the reader with examples. Although many illustrative resources are non-textual (e.g. drawings, photographs, animations, video), they can also be provided in the form of supplementary text. Illustrative resources often provide the reader with another way to grasp what is being described (e.g. a video reenactment of a battle), or extend learning by showing how a concept plays out in different contexts (e.g. photos of various types of mammals).
  5. **Summarizing Resource:** Summarizing resources provide the reader with a condensed way of viewing some aspect of the document. Examples of summarizing resources include a table of contents, a list of key ideas, a concept map of major vocabulary, and a chronology of events. Any given digital text may have multiple summarizing resources, each providing an overview of the document's content from a different perspective.
  6. **Enrichment Resource:** Enrichment resources provide the reader with information that is related to the text, but not strictly necessary for understanding what is written. Enrichment resources supplement the text and help the reader by extending or embellishing on what can be learned from the core text. Information about the text's author, the time period in which a text is set, or the text's publication history are all types of enrichment resources.
  7. **Instructional Resource:** Instructional resources provide the reader with prompts or instruction designed to facilitate successful reading and learning within the text. The purpose of an instructional resource is often twofold: to improve reading of the specific text to which it is linked, as

well as enhance a student's general literacy skills. Instructional resources range from simple reminders or comprehension questions in the text's margin to interactive tutoring and online mentoring.

8. **Notational Resource:** Notational resources provide the reader with tools for marking, commenting on, or taking notes from the text. Notational resources can be used to allow readers to mark the text in some way (e.g., electronic highlighting and bookmarking) or take notes on what they are reading (e.g., post-its, margin notes, outlining, drawing, etc.). The underlying purpose of notational resources is to promote effective studying of the text by providing ways to record electronically what is important to remember or relevant to an assignment. Sometimes the end products (e.g., electronic notes or highlighted text) can be grouped together and printed to facilitate post-reading review.
9. **Collaborative Resource:** Collaborative resources provide a reader with tools for reading and studying a text in collaboration with another reader, the author, or some other relevant person. Examples of collaborative resources include an email link to the author, a threaded discussion with other readers, and a chat room for questions and answers with online consultants.

These supportive resources are not mutually exclusive. Any given feature in a digital text may serve more than one function and therefore serve as more than one type of supportive resource. For example, in Chaucer's *Canterbury Tales*, the reader is able to select options for displaying the text, which allows the reader to have both the Old English version and the Modern English version of a specific tale on the screen at the same time. This feature is both a presentational resource (in that it allows customization of the display to match the reader's needs) and also a translational resource (in that it translates archaic words with unfamiliar spellings into modern equivalents).

In a similar manner, a table of contents can be both a summarizing resource and a navigational resource. The list of chapters or sections within the digital text serves as a summarizing resource because it provides an overview of what is contained in the document. If

---

each item in the table of contents is also linked to the section containing that content, then it is also a navigational resource because it facilitates movement within the document to a desired spot.

### Supported Texts Designed to Improve Reading and Studying

Digital texts with embedded links are not necessarily “supported texts”. To be useful to the reader, links and other supportive features need to function in a way that fosters improved reading and studying of the text they are linked to. All of us have had the experience of clicking on a link, only to realize it has taken us somewhere we did not expect to go. Worse, it has led us to information or media that is useless or distracting. For example, it has become customary to expect the definition for a problematic word if one follows the link attached to a word in a paragraph of text. However, one might just as well find that the link leads to a cute but irrelevant animation, a grainy photograph of indeterminate origin and no caption, or another website only tangentially related to the concept in question.

If evaluating a digital text for possible use in the classroom, look for features that will in fact help students read and understand the information presented. When you find features that appear to support the reader ask “What does this add to the reading process?” or “How will this help my students better comprehend what they are reading” or “Will this help my students achieve the instructional goals I have for this reading assignment?” And keep in mind that there are certainly individual differences among the students. The types of supportive resources that are useful to one group of students might be distracting to another. It is possible to get too much of a “good” thing. A handful of well-chosen pictures, for example, is almost always more helpful to readers than dozens of tangentially related ones.

It is increasingly easy to find digital texts on the Web that are supported with multiple resources. These resources can work in combination to provide readers with different levels and different types of reading support. For example, modifications and enhancements to a single digital text might be used to support (a) *decoding* of difficult words (e.g., text to speech or digitized pronunciations); (b) *compre-*

*hension* of difficult passages (e.g., vocabulary definitions; illustrations of people and places, timelines of key events, supplementary background information); (c) *research* to locate specific information (e.g., integrated search tools, links to reference materials and related sources); (d) development of *literacy skills* (e.g., self-monitoring comprehension questions, electronic reading strategies); and (e) *content-area knowledge* acquisition (e.g., lesson plans and assignments, quizzes and tests).

In the following section is a description of a web-based digital text developed by Anderson-Inman, Horney and colleagues in the Center for Electronic Studying at the University of Oregon. The text has been modified and enhanced in a variety of ways for the purpose of improving comprehension and extending learning.

### The Diary of Opal Whiteley

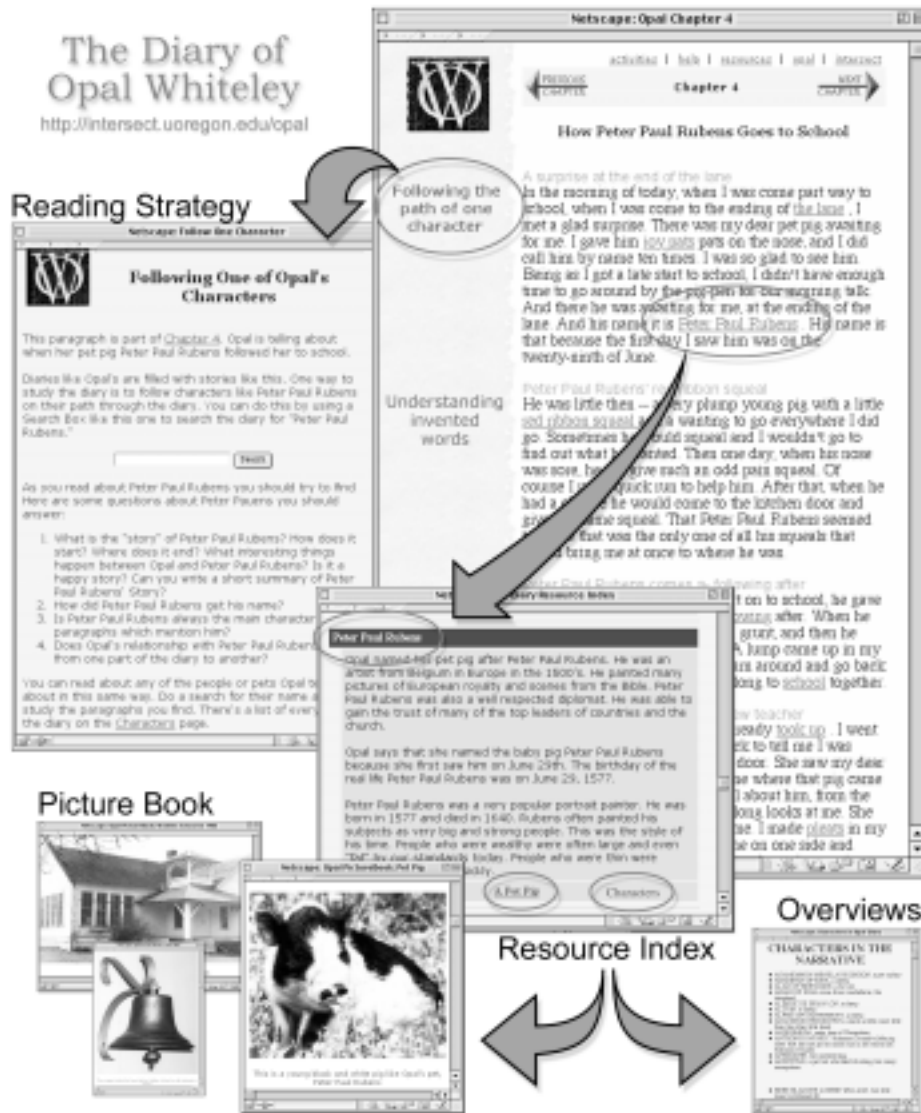
In 1920, one of the nation’s best selling books was the diary of a seven-year old child growing up in the logging camps of western Oregon. The writing is unique and charming, full of references to animal friends, sheltering trees, and kindly neighbors who fill in where parents leave off. Originally written on scraps of paper with crayons and colored pencils, it was first published in serial form by the *Atlantic Monthly* and received rave reviews from readers across the country. Opal Whiteley, the precocious author of this early diary, grew into a charismatic young woman who taught nature classes in two states, astounded the faculty of three University of Oregon departments, and traveled to India in the footsteps of an imaginary “father”, Henri d’Orleans, exiled pretender to the French throne. There is more (much more) but that is enough to set the stage.

In Oregon schools, Opal Whiteley’s published diary (Whiteley, 1920) is often used to illustrate children’s diary writing within the context of a unit or course on journaling. It is widely read and discussed, particularly at the middle school level. For this reason, Opal’s diary was selected as one of the texts for Project INTERSECT, a federally funded project in the Center for Electronic Studying designed to evaluate the use of supported text for at-risk readers. An electronic version of Opal’s early diary has been included in the INTERSECT Digital Library (<http://intersect.uoregon.edu>), enhanced

with a variety of text-based and media resources designed to support students as they read and study the text. Below is a list of the types of supportive resources developed for the Diary of Opal Whiteley, provided as an example of how multiple resources can be used to

support a single digital text. For a figure illustrating some of these resources, please see Figure 1. To see how these resources work to provide students with a unique reading environment please go to <http://intersect.uoregon.edu/opal>.

Figure 1



1. **Presentational Resources:** The INTERSECT version of Opal’s diary can be read using any one of four presentational formats, based on the amount of text desired on the screen. These presentations are called “pagnations” and enable reading the diary by chapter, by day, by scene, or by paragraph. Readers can move through the diary using a single pagination, or switch back and forth

between paginations. In addition, the text’s font can be altered in size and type using capabilities built into most web browsers.

2. **Navigational Resources:** Opal’s online diary has a variety of features designed to facilitate easy movement both within the text and to its supportive resources. In addition to the usual forward and backward arrows, navigational

---

resources include a top bar menu for easy access to the site's main features, and a bottom bar menu for changing paginations (e.g., switching from paragraph view to daily entry. Some of the summarizing resources (table of contents, timeline etc.) also serve as navigational resources with links to specific sections of the diary. There is also an excellent search tool built into the system facilitating easy location of diary entries through keywords or names of people, places, and things.

- 3. Translational Resources:** A key element in this version of Opal's diary is the translation of unfamiliar words into familiar ones using definitions and explanations. Unfamiliar words include referents to items not commonly used today (e.g., fascinator – a type of head covering for girls and women); words not commonly used outside logging camps (e.g., donkey engine, lumber shanty); words that mean different things to us than they did to Opal (e.g., school, stove); words referring to creatures of nature unfamiliar to many students (e.g., woodrat, banty hen); words in another language (e.g., Latin or French words); words used as names for Opal's pets (e.g. Thomas Chatterton Jupiter Zeus and Peter Paul Rubens); and words referring to unfamiliar people and places (e.g., Sadie McKibbon, the "man who wears grey neckties and is kind to mice," the "near woods", the far woods", etc.). Each unfamiliar word or phrase is provided with a link embedded in the text (i.e. colored and underlined), and the link leads to a definition or explanation designed to explain its meaning in the context of Opal's diary.
- 4. Illustrative Resources:** Illustrative resources are provided for many of the words and phrases for which there are translational resources. The vast majority of these illustrative resources are historical photographs, culled from the collections of local historians and family members. The photographs illustrate Opal's friends and family, places mentioned in the diary, animals and plants Opal collects, and items as they existed at the turn of the century. A special feature is the Picture Book, a collection of labeled photographs that provides readers with an alternate entrée into Opal's diary. Students can begin by choosing a

picture (e.g., Opal as a child, her one room school house, the draft horse William Shakespeare, etc.), reading its caption, and then traveling via link to one of several segments of the diary related to the picture. In this way, the picture encourages students to read the diary and the diary's text serves as an illustrative resource for the picture.

- 5. Summarizing Resources:** Opal's online diary has a variety of summarizing resources. These include a table of contents for each "pagination" (i.e., a table of contents for chapters, another one for scenes, etc.). The titles in each table provide a quick overview of the book's content and links allow the reader to jump directly to any entry. There is also a *timeline* of "days," with each daily entry given a title and linked to what Opal wrote on that day. The timeline provides a rough overview of when in time Opal wrote each entry and, where possible, even the most likely date on which it was written. Another summarizing resource is a "Cast of Characters" listing the people, animals, and trees that Opal wrote about. And there is also a hand drawn map of the geographic area, providing an overview of the places Opal mentions in her diary and illustrating their relationship in space to each other.
- 6. Enrichment Resources:** Extending the reader's understanding of Opal and the time period during which she wrote her diary are a variety of enrichment resources. There is information about Opal as a person and author, there is an introduction to the diary and its publication history, and there are links to other websites containing information about Opal and her other published works. Many of the historical photographs collected into the Picture Book also serve to enhance the reader's understanding of Opal's life in a logging camp at the beginning of the 20th century. None of this is absolutely necessary for comprehending Opal's diary, but the sections do enrich the reader's understanding of the author and the context in which she wrote her most famous work.
- 7. Instructional Resources:** Three types of instructional resources are being developed for our online version of Opal's diary. The first are

---

strategies for reading electronic text: e.g., using the search feature to follow a character in the diary, opening multiple windows simultaneously, and using supportive resources such as vocabulary definitions and illustrations (see Figure 1). In addition, instructional resources are under development to teach diaries as a literary genre and guide students in journal writing techniques. These last two strands of instructional support are not necessary for comprehending the Opal's diary, but facilitate its integration into the curriculum in ways that promote literacy.

8. **Notational Resources:** There are no notational resources built into this electronic version of Opal's diary other than those available to readers through their browsers (e.g., "Bookmarks" or "Favorites"). To compensate for this, there is an instructional resource that teaches students to take notes from electronic text (i.e. Opal's diary) using a commercially available electronic outlining or diagramming program such as *Inspirations 2003*. Using this process students learn to toggle back and forth between the web page containing a diary entry and a window containing the notetaking program.
9. **Collaborative Resources:** One collaborative resource is available to readers of Opal Diary. Using the "Ask an Expert" button, readers who have a question about the diary or about Opal can email Steve Williamson, Opal historian and research assistant at the Center for Electronic Studying. Depending on the need, he will either answer the query directly, or refer the reader to additional resources.

### Locating Support Text Materials

Electronic reading environments can be found on the Internet at various types of websites. However, finding digital texts with useful supportive resources takes some exploration. As can be deduced from the discussion on Opal's Diary, not all digital texts on the Web offer the same types of supports. To find supported text aligned with the K-12 curriculum, it is important to look for digital libraries that offer texts with the types of resources students need. Good places to look for digitized versions of classical literature are the various "digital libraries" on the Web.

Some digital libraries are gateways to digital texts from other websites, thus it is possible to find the same text on multiple websites. Other digital libraries offer unique systems for text presentation and reader support. For example, although there are many digital libraries carrying Shakespeare's plays, only a few provide the reader with supportive resources that enhance comprehension and promote learning. One example is "A Midsummer's Night Dream" offered by *Shakespeare Online* at the University of Northern British Columbia (<http://quarles.unbc.ca/mid-summer/>) which provides definitions to unfamiliar words and phrases, as well as background information on all mythological characters and events in the play. Some digital libraries providing free supported text versions of classic literature are Bibliomania (<http://www.bibliomania.com>), SparkNotes (<http://www.sparknotes.com/lit/>) and the Perseus Digital Library (<http://www.perseus.tufts.edu>). For a more expanded list of digital libraries useful to teachers, go to the Teacher Resources section of the Project INTERSECT website (<http://intersect.uoregon.edu>).

Another excellent source of digital text with supportive resources is websites sponsored by various governmental agencies. Education is part of the mission of nearly all governmental agencies and organizations and in today's world that means having a website with relevant educational material, often in text form. The *U.S. Geological Survey* (USGS), for example, publishes a supported text called "The Dynamic Earth" (<http://pubs.usgs.gov/publications/text/dynamic.html>) and Fermi National Accelerator Laboratory publishes a text entitled "The Science of Matter, Space and Time" (<http://www.fnal.gov/pub/inquiring/matter/index.html>) with supporting explanations, video illustrations, and demonstrations. To locate websites sponsored by governmental agencies and organizations, go to the gateway site Federal Resources for Educational Excellence (FREE) at <http://www.ed.gov/free> and search by category.

A third type of website worth searching for electronic texts with supports helpful to students is archives of digitized primary source documents. For example, the *DoHistory* website has published an online version of "Martha Ballard's Diary" (<http://www.dohistory.org/diary/>), nearly 10,000

---

diary entries written between January 1, 1785 and May 12, 1812 detailing everyday life in early America. Supporting the original handwritten diary (presented as photographed facsimiles) is searchable electronic text, instructional assistance in decoding and transcribing the diary, and a selection of the diary's stories and themes. A collection of diaries or journals from the Spanish Colonial period can be found at *Web de Anza* (<http://anza.uoregon.edu>), constructed by the UO's Center for Electronic Studying. At this website, multiple diaries from expeditions led by Juan Bautista de Anza in the late 1700s (one of which led to the founding of San Francisco in 1776) are supported with interactive maps, drawings, photographs, timelines, definitions, summaries and supplementary information about people and places (see especially Anza' diary for the 1776 expedition). Many of the diaries appear in both the original 18th century Spanish and a modern day English translation. A good source for locating primary source documents is the Library of Congress' American Memory website (<http://memory.loc.gov/ammem>).

A final type of website to explore when looking for supported text versions of printed material are websites developed for specific populations. For example, there is an increasing number of good websites being developed for young children. One of these is the *PBS Kids* website (<http://www.pbskids.org>) which offers more than 70 stories (a new one each week) supported with pictures, definitions, games and songs loosely linked to the *Between the Lions* TV show. Students with reading difficulties due to language or learning problems have also been targeted for support with materials designed to meet their specific reading needs. The materials developed for Project INTERSECT, for example, contain supports found to be effective for at-risk readers, many of whom have learning disabilities or are English Language Learners. In addition to the *Diary of Opal Whiteley*, the INTERSECT Digital Library (<http://intersect.uoregon.edu>) contains such diverse texts as "On the Run", a high interest, low vocabulary novel designed to appeal to adolescent boys (<http://intersect.uoregon.edu/OnTheRun/default.html>) and "Your Genes, Your Choices", a fairly easy science text on genetics. (<http://intersect.uoregon.edu/genes/default.html>).

## Conclusion

Some day, the types of supported text materials described in this article will be the norm, not the exception. As it stands now, however, integrating digital texts from the Web requires locating the right texts and ensuring that they have the types of supportive resources useful to students and aligned with curriculum goals. It is also necessary to teach students the importance of the resources embedded in a given text and guide their use of the text's unique features. For example, the fact that there are definitions and explanations for problematic vocabulary in a text does not necessarily mean students will choose to read the definitions provided. Unless knowing the vocabulary is a curriculum goal, and students are held accountable for learning new words in the text, it can't be assumed that students will automatically understand the value of the embedded definitions or expend the additional effort to read and integrate the definitions into their understanding of the material. This is particularly true for students who have a long history of poor comprehension and subsequent low academic motivation. The use of all text's supportive features should be taught explicitly so that students know how to navigate in the new electronic reading environment and can benefit from the resources provided to support their understanding.

## References

- Anderson-Inman, L. & Horney, M. (1997). Electronic books for secondary students. *Journal of Adolescent and Adult Literacy*, 40(6), 486-491.
- Anderson-Inman, L. & Horney, M. (1999). Electronic books: Reading and studying with supportive resources. *Reading Online*. Electronic journal of the International Reading Association, available at <http://www.readingonline.org>.
- Anderson-Inman, L. & Horney, M. (1998). Transforming text for at-risk readers. In D. Reinking, L. Labbo, M. McKenna & R. Kieffer (Eds.). *Handbook of literacy and technology: Transformations in a post-typographic world*. (pp. 15-43.). Mahwah, NJ: Lawrence Erlbaum.
- Inspiration Software, Inc. 2004. *Inspiration* (Version 7.5) [Computer software] [www.inspiration.com](http://www.inspiration.com).