



Executive Summary: A Review of the Capstone Interactive Library and the Effect of Multi-media Presentation on Instruction for Special Populations

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Executive Summary

An instructional message is a communication that is intended to foster learning. In presenting an instructional message to learners, designers have two main formats available - words and pictures. Words include speech and printed text; pictures include static graphics (such as illustrations and photos) and dynamic graphics (such as animation and video). For hundreds of years, the major format for presenting instructional messages has been words, including lectures and books. In short, verbal modes of presentation have dominated the method in which we convey explanations to one another and verbal (oral) learning has dominated education.

Multimedia refers to the presentation of material using words and pictures. The case for multimedia rests in the premise that learners can better understand an explanation when it is presented in words and pictures than when it is presented in words alone. Multimedia messages can be described in terms of the delivery media (e.g. amplified speaker and computer screen), presentation mode, (e.g., words and pictures), or sensory modalities (e.g. auditory and visual). The process of multimedia learning can be viewed as information acquisition (in which multimedia messages are information delivery vehicles) or as knowledge construction (in which multimedia vehicles are aids to enhancing the senses).

The major format for presenting instructional material has been verbal. The rationale for multimedia presentations, that is, presenting materials in words and pictures, is that it takes advantage of the full capacity of humans for processing information. When material is presented only in the verbal mode, the potential contribution of the human capacity to also process material in the visual mode is ignored (Mayer 2001).

The use of multimedia presentations in the kindergarten through twelfth grade educational environment may have significant ramifications for special populations. Individuals of all ages who are diagnosed with specific learning disabilities, autism, dyslexia, and hearing impairment may benefit from a multimedia learning environment. In addition, there is emerging evidence that English as a Second Language (ESL) learners may also benefit from this type of instruction.

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“The Capstone Interactive Library capitalizes on the use of multimedia, providing a great interactive resource to be used by teachers, parents, and students to enhance reading and reading comprehension levels.”

Potter (2009) in one of his *Capstone Interactive Library Study* responses notes:

“Multimedia is transforming the special learner environment. Interactive and engaging technology can allow the special learner to take control of their experiences, which is empowering. Customization of the special learner experience during a multi-media/interactive engagement builds trust between the program and user. When trust is established, a deeper sense of commitment is obtained and will allow the user a prime opportunity to learn. Interactive/multi-media is the only consistent format that ensures every learning style can be presented on demand and this ensures the best learning experience can be achieved consistently”.

The America Reads Challenge of the Clinton Administration indicated that about 17% of school-age children are considered poor readers, and millions of children enter school each year without adequate prereading skills. *Varied instructional strategies* are even more critical for children from families with a history of poor reading, and appropriate reading interventions can compensate to a degree for the lack of exposure to print and for low levels of parental literacy and laptop reading (Lewis 1997).

Levy (2008) concludes that, given that many young children now enter their early years in education as competent and frequent users of digital technology, schools need to identify ways in which to capitalize on the use of multimedia in order to promote confidence and skills in young readers today.

The Capstone Interactive Library capitalizes on the use of multimedia, providing a great interactive resource to be used by teachers, parents, and students to enhance reading and reading comprehension levels.



Figure 1: The Capstone Interactive Library - Welcome Page

“Colorful, eye-catching, stimulating, and inviting, the Capstone Interactive Library is a comprehensive and engaging site to explore. The variety of books in the 206–title library is impressive.”

Review of the research literature related to multimedia supports many of the design features and content of the Capstone Interactive Library. The library fully integrates the premise that learners can better understand an explanation when it is presented in words and pictures than when it is presented in words alone (Mayer 2001).

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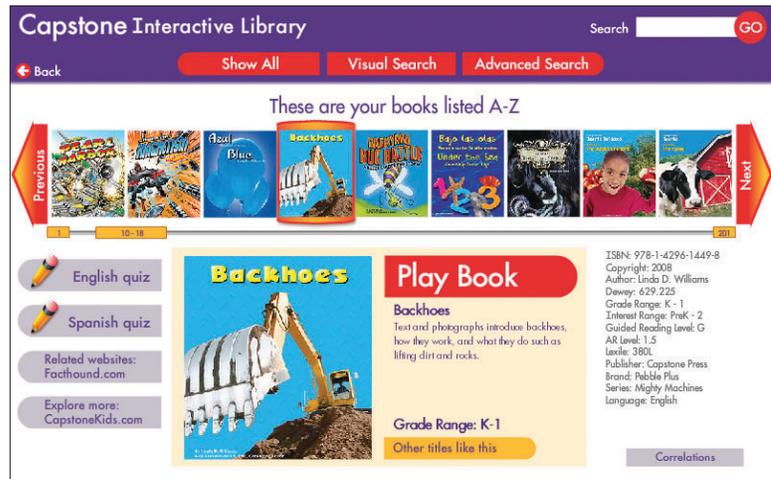


Figure 2: The library includes 206 titles of high interest materials on a variety of topics.

“... the use of sound, highlighting, and colorful screens help to stimulate several senses which enhances learning.”

Because most children, even special needs children, spend a lot of their time playing electronic games, the use of sound, highlighting, and colorful screens help to stimulate several senses which enhances learning. Users will find that the library will definitely get a child’s attention. A multimedia delivery system for classroom utilization not only effectively engages the students; it also stimulates the teacher as well (Wise and Groom 1996).

The Capstone Interactive Library provides a selection of electronic books that range from the feel of a comic book as illustrated by *A Crash Course in Forces & Motion* to the more traditional look and feel of a children’s book such as *Chicken Little*.

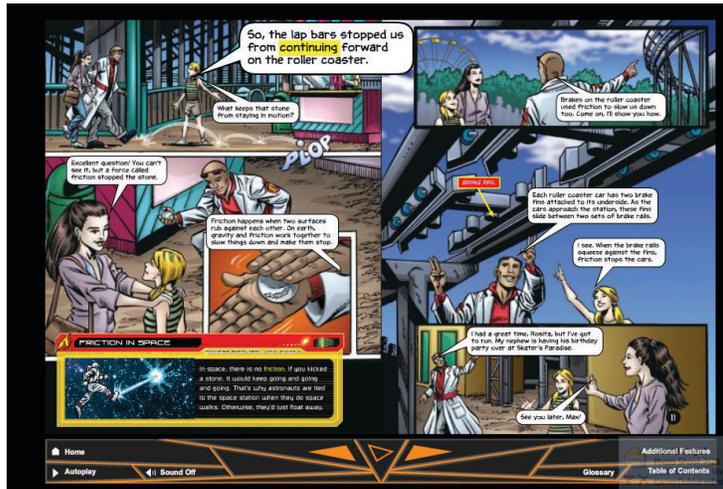


Figure 3: A Crash Course in Forces & Motion is presented in comic book format.

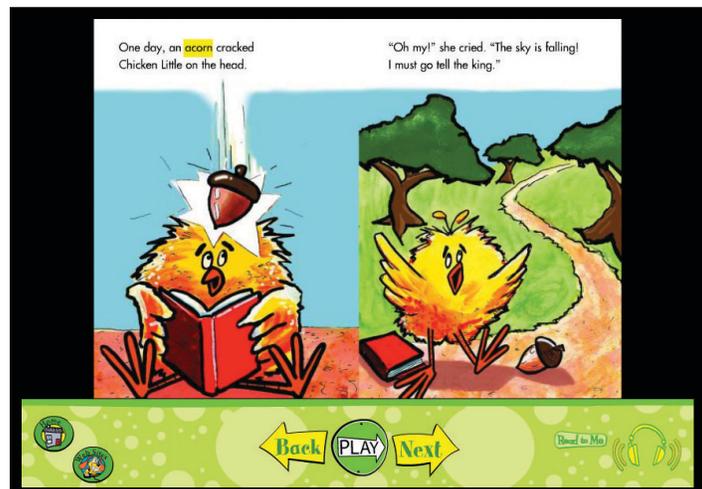


Figure 4: Chicken Little is presented in a more traditional format for younger readers.

Research-based concepts are integrated throughout the library. All of the books utilize **highlighting**.

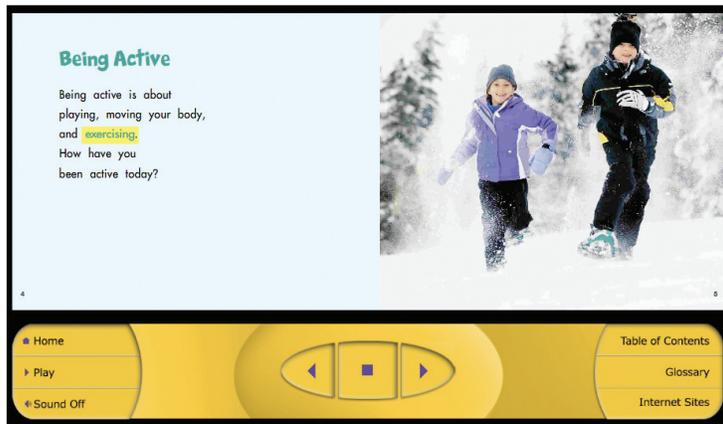


Figure 5: Words are highlighted as the reader follows the text as in Being Active.

“Combining strategies such as highlighting, magnification and audio provides a powerful learning tool for poor readers, particularly special needs students.”

Users have the option of the **audio “read - to”** which allows the reader to have the text read to him or her. However, readers can go through the content without **narration** if they so choose.



Figure 6: Audio function is controlled from the book toolbar. The toolbars are presented in different user-friendly formats, as shown by the four separate examples.

Several selections (e.g., *Fawn Braun’s Big City Blues*) include the use of **text magnification** – the font size of text increases as it is read; decreasing as the narration moves on to the next passage.



Figure 7: Each page of *Fawn Braun’s Big City Blues* opens with normal text as illustrated above.



Figure 8: Text is magnified and highlighted as the reader moves through the passage.

Combining strategies such as highlighting, magnification and audio provides a powerful learning tool for poor readers, particularly special needs students.

An important component of the Capstone books is the facility for non-linear navigation. **“Back and Next”** buttons allow the learner

to progress through the material in a self-paced fashion. Users have the ability to easily navigate back and forth in order to enhance their comprehension of the material. Most selections have **“autoplay” or manual** navigation functionality (see Figure 6). This feature further allows the reader to control the learning environment.

While the Capstone Interactive Library’s combination of printed text, narration, words, sounds, music, graphics, photos and animation provide an exciting reading experience for students of all abilities; additional features enhance this flexible learning environment.

Most books include a separate **“Fun Facts”** section that offer the reader additional information about the topic. Some **“Fun Facts”** are integrated directly into the storyboard as in *Air, Outside, Inside, All Around*. **Glossaries** are included with most books.

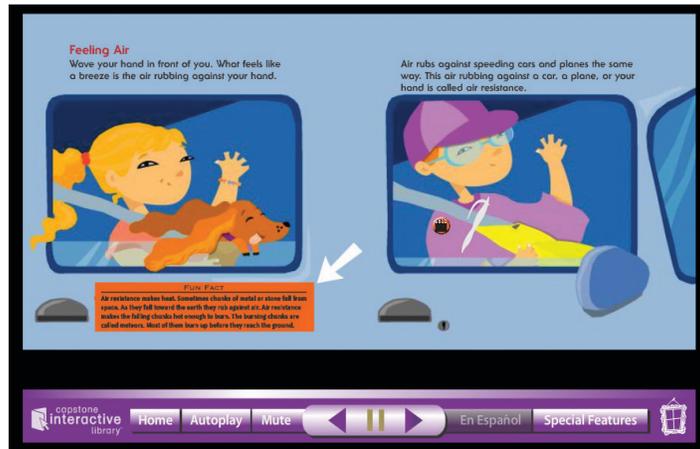


Figure 9: “Fun Facts” are available throughout the stories contained in the library; either in separate sections or included in the storyboards.

Independent learning is encouraged by the inclusion of links to **websites** related to the book’s topic(s). The sites are accessed through a separate hyperlink located on the page or, in some books such as *Handwriting Evidence*, by clicking on the **Learn More** button integrated into the storyboard.

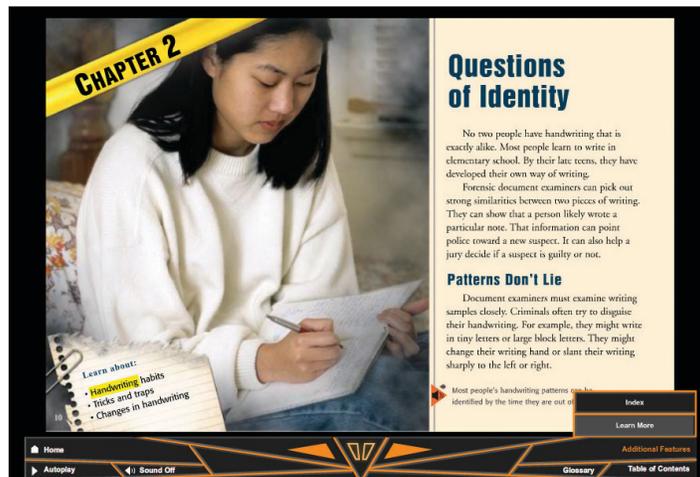


Figure 10: Learners can navigate to other websites and other learning experiences through “Learn More” links.

Research supports the premise that multimedia technology offers ways to help English language learners build vocabulary, achieve reading fluency, and improve comprehension. The Capstone Interactive Library offers numerous titles in both English and Spanish.



Figure 11: Learners are able to switch back and forth between English and Spanish narration.

Language acquisition is supported as readers easily move between the two languages, supported by narration in English and Spanish, highlighting, non-linear navigation, and all of the other functionality of the Capstone Interactive Library.

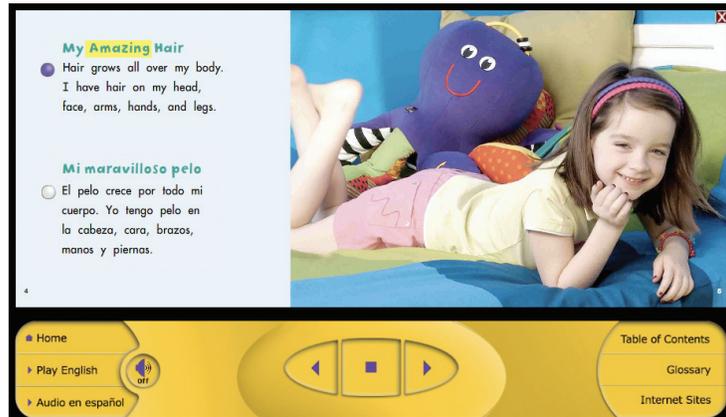


Figure 12: Learners are able to read and compare English and Spanish passages.

Language acquisition is supported as learners are able to not only able to *hear* the passages in both **English and Spanish** but are able to *view* the passages in both languages.