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Subject: From Mark Riccobono: NFB addendum email to New York City Department of Education
Date: Friday, August 28, 2015 4:51:38 PM
Attachments: [Inaccessibility of Kindle eBooks Chart 8.27.15.pdf](#)

Please see below and attached.

Ms. Ramirez:

In our letter of Wednesday's date, we excluded reference to the ability to read math correctly (to read presentations in MathML) from the charts we attached, because we had not had the opportunity to re-confirm that VitalSource books have that capacity. Since that time, we have received the following statement from VitalSource:

"We support MathML in all clients equally (browser, Mac, Windows, Android, Kindle Fire, Chrome Book, iOS). Specifically:

- VitalSource uses the evolving standard MathJax javascript framework to render MathML. MathJax fully supports accessibility including ChromeVox, Texthelp, JAWS, MathPlayer with more player support planned.
- We handle the implementation internally. In other words, publishers just have to provide valid MathML markup. VitalSource's platform handles the rest.
- When inquiries from end users, or institutions are received by VitalSource, we have the capability to test markup and work with the publisher in implementing and enhancing their MathML titles."

As we have earlier stated, there is no Kindle format that correctly reads MathML.

Please consider this an addendum to our information from Wednesday.

Best regards,

Mark A. Riccobono, President

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The National Federation of the Blind knows that blindness is not the characteristic that defines you or your future. Every day we raise the expectations of blind people, because low expectations create obstacles between blind people and our dreams. You can live the life

you want; blindness is not what holds you back.

Inaccessibility of Kindle Ebooks

Compiled by the National Federation of the Blind, August 2015

Amazon currently offers ebooks and econtent in two formats: Print Replica and reflowable text. The following two charts identify accessibility barriers for academic reading.

Inaccessibility of Kindle Print Replica Ebooks

Typically, Amazon’s electronic textbooks are only available in Kindle Print Replica format and cannot be accessed as reflowable text. The most accessible experience available from Amazon for reading Print Replica books is with the Kindle Fire. Even so, a blind student who follows the instructions provided by the Fire will be unable to read a Kindle Print Replica book at all. A technologically sophisticated adult can force the reading experience, but it is a difficult, inconsistent, and buggy reading experience that would cause a blind student to read far less efficiently than other students.

The following chart assumes that a blind student has managed to get the Kindle Fire to read the Print Replica book. The chart describes those tasks that a sighted student will be able to perform that a blind student cannot. As a point of comparison, the chart also shows how the reading experience on VitalSource’s desktop application allows both sighted and blind students to accomplish these same tasks.

Please Note: Traditionally, iOS is considered the most accessible platform for accessing Kindle books, but when a Print Replica book is loaded, a blind user will hear the message, “VoiceOver does not support this content,” rendering iOS unusable for Print Replica textbooks.

Features	Usable by Blind Students: Kindle Print Replica ebooks	Usable by Blind Students: VitalSource Desktop Platform
Look up the meaning of words and terms		
Read a text description of a picture or graphic		

Highlight text		
Make notes		
Read by paragraph		
Read tables		
Read MathML		
Return to highlights and notes		
Read text in Braille		
Determine the spelling of a word or term		

¹ Kindle Fire instructions for reading by paragraph result in a student reading by sentence fragment. No workaround strategy has been identified.

² Because blind users cannot highlight, the returning-to-highlights-and-notes feature could not be tested.

³ Braille can only be used with difficulty. Word wrap is not supported. Navigation of text is difficult as text is interpreted as one block per page for purposes of Braille, so paragraph markers and other separations in the text are lost.

⁴ As students will be required to start from the top of a page when searching for each word they are trying to spell and reading commands are inconsistent, it is technically possible but very labor and time intensive for a student to learn the spelling of a term.

Inaccessibility of Kindle Ebooks with Reflowable Text

Amazon’s Kindle ebooks with reflowable text (text that can be sized independently of layout constraints) are most accessible on an iOS device. Even then, a blind student will encounter many significant barriers to having a reading experience equivalent to his sighted counterparts. The chart below describes activities that cannot be successfully completed by a blind student with Kindle for iOS and compares these activities to the experience of reading a textbook in the desktop VitalSource application, which is one of the ebook platforms the National Federation of the Blind knows to be accessible.

Features	Usable by Blind Students: Kindle on iOS	Usable by Blind Students: VitalSource Desktop
Read tables		
Skip to the previous or next block or paragraph of text		
Skip to the previous or next hyperlink or heading		
Read the “alt text” labels on photos, illustrations, or graphics, i.e., know what the photos, graphics, or illustrations are that appear in the book		
Move reliably between footnotes / endnotes and where they are indicated in the text		
Read MathML		
Highlight text	 ⁵	

⁵ Text cannot be selected with Braille. The word that is first highlighted when a student begins to select text is not the same word as that which she had intended to select.

Make notes	 ⁶	
Braille support in text	 ⁷	

Please note: The preceding table focuses on the tools that are unavailable or impractical for a blind student to use with Kindle on iOS. Students are able to read basic text continuously, and by both character and word. They are also able to use bookmarks, search for terms, use the table of contents, and go directly to a specific location in the book. These features make the Kindle suitable for basic leisure reading, but without the features described in the preceding table, a blind student would be wholly unable to participate in the majority of classroom activities independently.

⁶ This would be available only when text has been successfully highlighted.

⁷ Braille navigation is limited to the ability to move page by page, or the length of the Braille display, so a user cannot move to different paragraphs in the text easily. Paragraph breaks are not clearly displayed. The inability to move only within these smaller chunks of text hampers a blind student's ability to skim content quickly.