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Using the JAWS Screen Reader and the Focus Braille Display to Read Foreign Language Books Downloaded from the Bookshare Accessible Online Library

Gaylen Kapperman, Stacy M. Kelly, and Elizabeth Koster

McColl (2005) and Orsini-Jones (2009) explained that more research and development is needed to enhance the language-learning experiences of students who are visually impaired (that is, those who are blind or have low vision). The methods commonly used nowadays are not sufficient for foreign language learning (McColl, 2005; Orsini-Jones, 2009). Furthermore, there are several challenges involved in the study of foreign languages by students who are visually impaired (Kapperman & Sticken, 2003). One of the most pressing of these challenges is that teachers of students with visual impairments provide braille copies of all instructional materials in the foreign language (Koenig & Holbrook, 2000). If the teacher is not familiar with the foreign language the student is studying, it becomes even more difficult to provide the required workbooks, textbooks, and other materials to be transcribed into the foreign language (Koenig & Holbrook, 2000). Likewise, those teachers who are unfamiliar with the foreign language may not know how to pronounce the special accented letters when providing instruction to their students regarding the braille symbols used to represent these letters (Koenig & Holbrook, 2000).

In 2003, Kapperman and Sticken described a strategy for students who are visually impaired to learn foreign languages independently using a portable braille notetaking device that was popular at the time called the Braille Lite. However, there were shortcomings to this strategy. The Braille Lite was unable to speak the foreign language properly. More specifically, it was noted in the

2003 article that "[l]earning to speak the language correctly is best accomplished by regular instruction from a foreign language teacher. If the Braille Lite's inappropriate pronunciation of the language is distracting or deleterious, then the speech can be turned off" (p. 704). Thus, although a method was outlined using a portable notetaking device in which refreshable braille and synthetic speech were combined to enable students with visual impairments to learn foreign languages independently, this strategy did not allow for appropriate pronunciation of the languages.

Almost 15 years later, we have entered an age in which most information is now "born digital" (Evidence Explained, 2017). The tools used for braille displays have evolved to a significant level along with screen readers used by people who are visually impaired. Also, in the past 15 years, Bookshare has become the largest online library of accessible books in the world for people with print disabilities (Benetech, 2017). These recent advances have been used to create a strategy for learning foreign languages that involves the use of current assistive technology hardware and software to enable individuals who are visually impaired to read books printed in a foreign language that have been downloaded from Bookshare. The authors have developed a strategy that results in the screen reader speaking the foreign language properly and the braille display showing the foreign language transcribed correctly when downloading foreign language books that are available from Bookshare.

General instructions

The equipment that the authors recommend is a Windows-based computer equipped with one of the latest versions of Job Access with Speech (JAWS) and a Focus braille display. In the instructions that follow, it is assumed that the computer user has sufficient knowledge to download books from Bookshare. If this is not the case, it is recommended that detailed instructions be acquired from the Bookshare website (www.bookshare.org).

JAWS comes "out of the box" from the manufacturer with preinstalled software that allows it to recognize eight different languages in addition to English when the cursor moves over content that has been "tagged" for the language in question, assuming that the Language Detect function of JAWS has been checked (that is, turned on). When books are downloaded from Bookshare, however, JAWS does not pronounce the words and letters correctly in a language other than English because the content of those books has not been "tagged" for the foreign language in which they are printed. The steps that need to be taken to enable JAWS to recognize foreign languages in Bookshare books are described in the next section of this report.

Downloading the speech synthesizer

The appropriate JAWS speech synthesizer for the language in question must be downloaded. The authors recommend Vocalizer Expressive, which supports 40 different languages.

To download and install the proper synthesizer:

1. Go to the Synthesizers Downloads page of the Freedom Scientific website, which is located at: https://www.freedomscientific.com/downloads/synthesizers.
2. Go to the dropdown menu for Synthesizer, and select Vocalizer Expressive. There are two choices for Vocalizer Expressive, and the appropriate version should be selected. Vocalizer Expressive Version 1 is available for use with JAWS 15, JAWS 16, JAWS 17, and MAGic 13.1. Vocalizer Expressive Version 2 is available for use with JAWS 18, ZoomText Fusion 11, and MAGic 14 (or later for each application).
3. Go to the dropdown menu for Language and select the desired language.

4. There will usually be a few voices to choose from, and audio samples of these voices are available.
5. When choosing a specific synthesizer voice, select Download Premium High (recommended) or Download Premium.
6. Downloading will take several minutes, and then the user will receive prompts for the final steps of the installation.

Setting up the downloaded speech synthesizer

After installing the JAWS Vocalizer Expressive speech synthesizer in the voice and language of choice, the user needs to restart JAWS and follow the series of steps outlined below.

1. After restarting JAWS, go to the Options menu and then Voice Adjustment.
2. Go to the dropdown menu by Profile Name and select the installed Vocalizer Expressive.
3. Go to the dropdown menu by Synthesizer Language and select the desired language.
4. Set language as Primary. The user will then have the option, in a pop-up menu, to type a name for the synthesizer, and whether or not to set it as the default language.
5. Select Apply.
6. Select Save As.

Connecting the braille display

The next component of this process involves connecting the Focus braille display to the computer, which can be done in two ways. The first method is to plug the Focus display into the USB port of the computer. JAWS will recognize it immediately. The second method is to connect the display via Bluetooth. For troubleshooting or more information about the use of the Focus braille display in conjunction with JAWS, readers are urged to acquire the Focus user guide documentation and instructions from the Freedom Scientific website.

Downloading a book

The next step is to download a book written in a foreign language from Bookshare. Once a book has been chosen, it should be downloaded as DAISY Text Only and then saved according to the following process:

1. Find the book in its compressed file form.
2. Unzip the book by selecting it and holding down Shift and F10 at the same time. Use the down arrow key to move through the menu until Extract All is reached. Press Enter. Select a destination in the pop-up that follows and, once the desired destination is selected, press Enter. The compressed folder will then be unzipped.
3. Go to the list of extracted files that are displayed. Find the file with the extension .opf. Highlight that title and copy it.
4. Find the FSReader application on the desktop and open it.
5. Go to the file menu in the FSReader application. Open the file menu. Paste the .opf file for the book that was downloaded from Bookshare. Press the Enter key to open the book.

JAWS can then be used to read the content of the foreign language book that was downloaded from Bookshare. The content will also be shown on the Focus braille display.

Invoking the speech synthesizer

Given that the downloaded book file is composed in a language other than English, JAWS will not pronounce the words correctly until the Vocalizer Expressive speech synthesizer for that language is invoked. To invoke the Vocalizer Expressive synthesizer, a user needs to return to the JAWS application and enable JAWS to speak the language required according to the following steps:

1. Go to JAWS menu,
2. press *l* for Languages,

3. press *v* for Voice Profiles,
4. press *d* for Default, and
5. use the arrow keys to select Vocalizer Expressive for the desired language and press Enter.

Once JAWS can speak the foreign language, the user should go back to the FSReader application and begin reading the Bookshare book using all of the typical JAWS reading commands. JAWS will pronounce the words, letters, and numbers properly in the foreign language.

Additional considerations

It should be noted that the Focus braille display will display the content in computer braille, which means that no contractions will be displayed. Although the content will be displayed letter by letter, the accented letters will be displayed properly. As an example, in German, the letter "a" with two dots above it (umlaut) is shown in braille as dots 3-4-5. That symbol, in this situation, is not to be interpreted as the "ar" sign. In German, that symbol represents the "a umlaut."

Also, one should have eight-dot braille invoked. In that fashion, all letters that are capitalized will be shown with dot 7 below them. All accented letters will be shown with dot 8 in addition to the special braille symbol representing that accented letter.

Switching speech synthesizers

In some cases, a foreign language book may include English phrases along with the foreign language content. Because language tags are not present in books downloaded from Bookshare, JAWS will not automatically switch back to English when English content is encountered, and it will attempt to pronounce English content in a foreign language book as though it were written in the foreign language. Thus, one must complete the following steps to switch the speech synthesizer back to English:

1. Go to the JAWS application,
2. press *l* for Languages,
3. press *v* for Voice Profiles,
4. press *d* for Default, and
5. use the arrow keys to select Eloquence English to switch back to English.

Conclusion

Using the steps outlined in this report, students who are visually impaired can have full access to published materials written in various foreign languages. Through the use of assistive technology and the online resources described in this report, a wide range of foreign language material can be instantly available in accessible formats to students who are visually impaired. The inclusion of braille readers in the study of foreign languages is facilitated by this up-to-date technique described here. However, the steps outlined in this report need to be further developed to describe how to accomplish these tasks with other operating systems, a wider range of screen-reading software, and several different types of braille displays. Future research should explore this immediate need, thus expanding the application of the information presented in this article.

Furthermore, the access to complex digital information outlined in this report is aligned with Benetech's Born Accessible initiative (2017). This initiative supports the concept that is central to the Bookshare operations, that all content "born digital" should also be "born accessible" (Benetech, 2017). That is, since educational materials are born digital, they should simultaneously be born accessible (Benetech, 2017). The steps and strategies outlined in this report are designed to enable students with visual impairments to access this born accessible content.

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Practice Perspective

Helping Students with Visual Impairments Know Themselves Better Through the Life-Sized Eyeball Activity

Cindy Bachofer

"I want to be the vitreous this time!" shouts an excited student as she claims the role of holding up a clear plastic ball decorated with sparkly stickers (aka floaters). Students trade places in line as they begin a second round of playing Life-Sized Eyeball. Knowing about the eye and one's eye condition is foundational to self-identity as a student with a visual impairment (that is, those who are blind or have low vision) and this initial activity in a series of lessons on the eye can help students along the way in that self-identity process. In this perspective, the rationale for dedicating instruction time to this topic, and unexpected benefits that have come from conducting these lessons with students, are described.

The Life-Sized Eyeball activity will first be explained, followed by examples of preteaching activities (that is, introducing vocabulary and other content information to students in preparation for an academic activity) to help students understand the structure of the eye and how the parts must work together for vision to occur (see Box 1). Everyday items are used that students hold as props to represent parts of the eye, starting with the cornea at the front and ending with the brain at the back. The parts of the eye represented, the item used, and the definitions to be read are listed in Table 1. Players hold an assigned prop and a label card as they take their place in line. The word for the part of the eye, such as "cornea," is printed in bold large letters on cardstock, and the simple definition is given on the back of the card (in print and braille, as needed). The prop can also be attached to a string and worn around the student's neck if this adaptation is easier for holding while reading the card. A voice recording of the definition or an adult reading it can be available if a student is nervous about reading aloud or needs support in the activity. Once everyone is in place, the cornea player holds up a clear plastic salad bowl and loudly reads, "I'm the cornea of the eye and like a windshield I protect the eye and stop things from getting in it." The players take their turns down the line according to the eye's structure. Taking a video of students rehearsing or of the final production can be

