NNELS

Accessibility Report for BookFlix

July 2024

The opinions and interpretations in this publication are those of the author and do not necessarily reflect those of the Government of Canada.

About NNELS

The National Network for Equitable Library Service (NNELS) is a digital public library of ebooks for Canadians with print disabilities, and an advocate for an accessible and equitable reading ecosystem for Canadians with print disabilities[1]. NNELS supports principles of openness, inclusion, and choice. NNELS is hosted by the BC Libraries Cooperative, a community service not-for-profit cooperative and a national leader in information and technology services.

Our team of Accessibility Testers has expert knowledge in the areas of accessibility testing, analysis, software development, and leadership. The team works to educate and advise publishers, technology vendors, and public libraries on best practices for accessibility. Our testers have lived experience with a range of

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[1] Print disabilities are defined by Canada's Copyright Act and include visual, mobility, or comprehension impairments such as dyslexia.

print disabilities, including blindness, low vision, and learning disabilities.

Accessibility Summary

BookFlix does not work well with assistive technology. While some pages and features are quite accessible, significant portions of the website cannot be efficiently navigated or read using a screen reader, and present barriers when enlarged via the use of screen magnification. Critically, none of the ebook content was readable using any screen reader, fully locking blind users out of 50% of the available content. Other sections present less overt barriers but provide limited options for sorting, filtering, or customizing the experience.

Introduction

BookFlix is a website which provides access to fictional and educational material for children. This material is provided in the form of pairs consisting of one ebook and one video story, with one being a fictional story and the other being an educational book with some relevance to the story. The website also offers puzzles and other activities designed to test the reader's knowledge and understanding of the content, as well as lesson plans for educators to use as a guide.

Our testers used screen-reading and magnification software to assess the usability of BookFlix. Readers can find a complete list of all the software and operating systems used in this assessment in this report's Systems and Assistive Technology section.

This assessment aims to determine the usability experience of readers with print disabilities and to what extent they can access BookFlix effectively and efficiently. While this report aims to provide an overview of the accessibility performance across supported platforms, this is not an in-depth review of BookFlix itself. As a result, some functionality may not be discussed at all or in-depth.

Because of BookFlix's inconsistent compliance with accessibility guidelines, it is ill suited for use by visually impaired children and educators alike. This is further compounded by the relationships between various pages and features – for example, even if a child is able to access the puzzles and games for a title, and an educator is able to read and understand the lesson plan, neither is useful if the user cannot read the ebook the puzzle and lesson plan are based on.

Introduction to Assistive Technology

All mainstream operating systems include built-in screen readers (Narrator on Windows, VoiceOver on Apple devices, and TalkBack on Android) that read the contents of the screen out loud, allowing users with visual disabilities to browse apps and websites, send and receive texts and emails, and accomplish many other tasks with ease. Keyboard commands and custom touch gestures provide a flexible way for a user to find and interact with the controls on-screen. Windows also has alternative screen-reading software available, most notably a commercial option called Job Access with Speech (JAWS) and a free and open-source option called Non-Visual Desktop Access (NVDA). The text spoken by a screen-reader can be sent to a refreshable Braille device. Mainstream operating systems are also equipped with user interface magnification, large text options, and high-contrast viewing mode to assist people with low vision.

To ensure usability and accessibility of an application by people with print disabilities, all functions and controls must be accessible using assistive technologies. The DAISY Consortium explains that the basic assumption of accessibility evaluations is that reading systems "should support reading with eyes, ears, and fingers." (DAISY Consortium, 2017). It should be possible for users to read the content of the document by:

- Reading the text with screen readers or self-voicing text to speech (TTS) applications

- Adjusting the display, including font size, alignment, and colour contrast, or a combination of some or all these options
- Reading the text with a refreshable braille display
- Reading with assistive technologies designed for persons with dyslexia or other disabilities
- Reading with the app's built-in read-aloud functions

Accessibility Performance and Recommendations

This section will dive deeper into specific accessibility issues encountered while testing the BookFlix website. Below you will find the testing results and their related recommendations as they pertain to:

- Sign-Up and Login
- Layout and Navigation
- Searching and Browsing
- Reading and Watching
- Accessing Supplemental Activities
- Visual Adjustment

Finally, the *development recommendations* sections contain suggestions for improving the interface on each platform. These suggestions will be relevant to any issues or observations noted above.

BookFlix Website
- Tested operating systems: Windows 10 / 11, MacOS 13.6.6 / 14.4.1 / 14.5, Linux 6.9.6, iOS 17.4.1, Android 14
- Tested browsers: Chrome 125 / 126 / 127, Safari 17.3 / 17.5, Firefox 125 / 129

Sign-up and Login

Most of our testers accessed BookFlix through an affiliated link provided for testing purposes, rather than through their own library. As such, the login process was not extensively tested.

Users who did have access through their local library did not encounter any issues entering their library card number and PIN.

Layout and Navigation

The website's layout is suboptimal and does not follow common practices which screen reader and magnification users are often used to. While the website makes use of regions and landmarks, they are sometimes applied in nonstandard ways, for example the navigation menu being located within the main region. Screen reader users commonly make use of keyboard commands to jump to the main region as a method of skipping the menus when they are not needed, but this layout removes their ability to do that. The website does make use of headings, which offers another method of navigation.

Other design choices presented barriers throughout the site. Audio sometimes automatically plays when the homepage is loaded, which is a major distraction for screen reader users. Image links on multiple pages contain repetitive alt text and labels, causing verbose and confusing speech when screen reader users encounter them. Many of these image links consist of multiple images grouped together, which various screen readers handle differently, and can cause confusion when what appear to be different images lead to the same destination. The logo and the link to return to the homepage are separate elements, which throws off users who are used to clicking the logo to return to the homepage, particularly low-vision users who may require extra time to locate a less distinctive separate link or button.

Many of our testers found the behaviour of the 'Resources and Tools' button to be problematic. It opens a modal that implies the user will be leaving the website, but that is not the case as the pages it leads to are still part of the site. At best, this requires extra clicks to access these pages; at worst, some users may fall for the misinformation and not proceed, effectively being locked out of them entirely. Additionally, VoiceOver Users on MacOS found that these pages often failed to load properly, making them impossible to browse even if they did proceed past the modal.

Searching and Browsing

The search field and button are adequately labeled and can be operated by blind and low-vision users. Search functionality is very basic, lacking features such as setting parameters and autocomplete suggestions which would be beneficial for several accessibility use cases if implemented.

Search results are displayed at the bottom of the current page rather than loading a separate search results page. Some screen readers, such as Narrator and NVDA, move their focus to the search results when they appear, but VoiceOver does not, making search less efficient for blind Mac users. There are no options to sort or filter search results.

Search results remain visible, at least to screen readers, unless one is selected, or they are manually dismissed; they do not disappear if the user moves to a new page other than by clicking a search result and are not replaced if another search is performed. While this is not an accessibility showstopper, it is unconventional behaviour that could easily confuse users.

Titles can be browsed either by activating links to categories on the homepage, or by navigating to the Title Library page. The homepage route is quicker to access but lacks the ability to sort or filter results. Accessing the Title Library page requires going through the confusing confirmation modal and is particularly buggy for VoiceOver users as previously detailed, but does offer accessible controls for sorting and filtering, at the expense of pairs being displayed in a more verbose format.

When both searching and browsing, book and video titles are consistently difficult to see for low-vision users. Titles are very small, and do not sufficiently stand out from their borders or from the cover images they are nestled within. Many of the book and video covers are low resolution images, which also contributes to the difficulty of identifying titles. Enlarging, bolding, and/or adding separate text titles would increase readability, as would providing higher resolution cover images.

Reading and Watching

The record page for each pair does not contain information about either of its titles, even though such information is available elsewhere on the Title Library page. The links to open each title have unnecessarily verbose labels but are otherwise understandable and clickable using screen readers. Some record pages do not correctly scale when browser zoom is used.

Reading ebooks is not accessible using any screen reader. None of our testers were able to read any text, and none of the controls could be read or activated.

Low-vision users can read ebooks, but controlling and navigating is a challenge. The previous and next page buttons are well outside of the content's borders and have very low colour contrast until the mouse pointer hovers over them. The ebook reader has a zoom-in feature, but it does not enlarge the content area, forcing a user to scroll a lot more. Ebook content is not reflowable.

The contents of picture books do not reliably enlarge when browser zoom is applied. The ebook controls do enlarge, which can cause them to overlap with the content that does not. When browser zoom is set to very high levels, ebook settings become hidden unless expanded by activating a hamburger menu button which suffers from low contrast. Maximum zoom also causes the website to assume the user is on a mobile device even if they aren't, which is problematic on devices which can't easily be flipped to change screen orientation.

Watching video stories is generally accessible using screen readers, except for the read along feature, which does not make the current text accessible to any screen reader that was tested. None of the video stories have audio description, excluding blind users from any visual elements which are not adequately described within the story.

There are other minor issues depending on which screen reader is being used. TalkBack on Android is not able to adjust the volume

and reads other controls unnecessarily verbosely. VoiceOver on MacOS does not reliably report the current playback speed or whether captions are on or off. The control to adjust playback speed is recognized as both a button and a menu control, which causes unexpected behaviour when toggling it with both TalkBack and VoiceOver. JAWS is not able to use the progress bar to seek to a specific time within a video.

The video playback controls are large and easy to see using magnification. Low-vision users can see the video, control playback, and follow along using the read along feature.

Accessing Supplemental Activities

Pairs are accompanied by lesson plans for educators. These are displayed in a text format which is compatible with screen readers and magnification. The layout is logical, and sections are marked with headings for easier navigation.

Many titles feature puzzle games designed to test the reader's knowledge. A blind user's ability to access the games varies greatly depending on which screen reader is being used. TalkBack on Android is unable to recognize the links to the games at all, and VoiceOver on MacOS can focus and activate the links but cannot access enough of the puzzle controls to play any of them.

JAWS/Fusion, NVDA, and Narrator users are able to play the Word Match and Fact Or Fiction games. Matching a word in Word Match was sometimes found to move screen reader focus to the top of the page, forcing the user to navigate back to where they were. The image displayed upon completion does not have a text description, depriving screen reader users of one of the rewards for success. The Which Came First game is not meaningfully playable using any screen reader. Images have alt text identifying which number they correspond to rather than a description of the image, which defeats the purpose of playing the game.

Playing puzzle games using magnification also presents many barriers. Setting a browser's zoom to maximum causes the game

board to become larger than the screen. The image revealed at the end of Word Match is not displayed for long enough, and the Fact Or Fiction buttons offer poor visibility without colours to differentiate them. Like for screen reader users, Which Came First is the least compatible game, as the images' tool tips reveal the correct order similar to their alt text. Instructions for puzzle pieces are not read aloud as in other games and require clicking in precise spots with the mouse to read.

Visual Adjustment

BookFlix does not offer any sitewide visual accessibility settings. The ebook reader includes a zoom-in feature, but using it results in an effectively smaller content area, which requires more scrolling to read. Users are otherwise reliant on magnification, high contrast, and dark mode within their operating system or browser. Not all page contents are fully compatible with these features, resulting in scaling and visibility issues.

Development Recommendations

- Replace the ebook reader. The new ebook reader should allow screen readers to read text, support image descriptions, and provide labeled controls which can receive keyboard focus.
- Remove the confusing Resources and Tools button, and add Title Library, Resources, and Help to the main menu.
- Remove redundancies between alt text and labels so link and button text does not repeat itself.
- Implement size, colour contrast, and dark mode options.
- Consider creating a dedicated page for search results with sort and filter options.

Conclusion

Neither the BookFlix platform nor its content are sufficiently accessible to blind and low-vision users. Screen reader and magnification users experience challenges navigating the website and the former are completely unable to access a significant portion of the stories. Considerable effort must be made by both

developers and content creators if BookFlix is to become a valuable educational resource for blind children and educators.

Systems and Assistive Technology

- Operating Systems
  - Windows 10, 11
  - macOS 13.6.6, 14.4.1, 14.5
  - Linux 6.9.6
  - iOS 17.4.1
  - Android 14
- Browsers
  - Chrome 126, 127 (Windows), Chrome 125 (Android)
  - Safari 17.3, 17.5 (MacOS, iOS)
  - Firefox 129 (Windows), Firefox 125 (Linux)
- Screen-readers
  - NVDA 2024.2 (Windows)
  - JAWS 2022 (Windows)
  - Fusion 2023 (Windows)
  - ORCA (Linux)
  - VoiceOver (macOS, iOS)
  - TalkBack 14 (Android)
- Magnification
  - Fusion 2023 (Windows)
  - Zoom (MacOS)

Acknowledgements

The following testers and editors contributed to this report:

- Patrick Bouchard (lead writer)
- Tait Hoyem
- Simon Jaeger
- Michael Krupp
- Riane LaPaire
- Ka Li
- Megan Sellmer
- Melody Shih

Published by the [National Network for Equitable Library Service](#) (NNELS), Vancouver BC, (year)