

Dyslexia Friendly Reader

Prototype, Designs, and Exploratory Study

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Outline

- Difficulties to moderate
- Reader research
- Current state of reader apps
- Towards and ideal reader app
- Description of a reader prototype
- Preliminary user study results
- Future direction

Dyslexic difficulties

- Decoding
- Working memory
- Rapid naming
- Long, rare words
- Focus
- Vision (rare)

- Speed

Typical modification

- **Font type** – small impact
- **Colours** – only useful for small numbers
- **Avoid** underline, ALL CAPS, *italics*, justify, centre – *small-med impact*
- **Font size** – big impact
- **Line spacing** – medium-big impact
- **Small chunks** – big impact
  - Lists – medium impact
  - Structure/outline – medium impact
  - Small amount of text displayed – big impact
- **Audio** – biggest impact

Readers

- Readers associated with well-known e-book shops (Amazon, Kobo, iBooks, Google Play Books)
- Mainstream standalone readers not associated with a particular e-book repository (Aldiko Reader, Cool Reader, FB Reader, Moon+ Reader)
- Alternative readers aimed at specific audiences or formats (Ideal Group Reader, AutoReader, SpeedReader, Repligo Reader, ezPDF Reader)

Typical reader features

- Basic features for navigating the text. This includes page turning and outline navigation. However, the implementation of these features is not uniform across readers.
- All readers also allow the user some level of customization of text display. The level of customisation varies by reader as does the interface.

Typical reader features (cont.)

- Access to the basic copy of text (unless prevented by digital rights management).
- Management of books using a library and a file browser.
- Highlighting, notes and bookmarks.

Features of some readers only

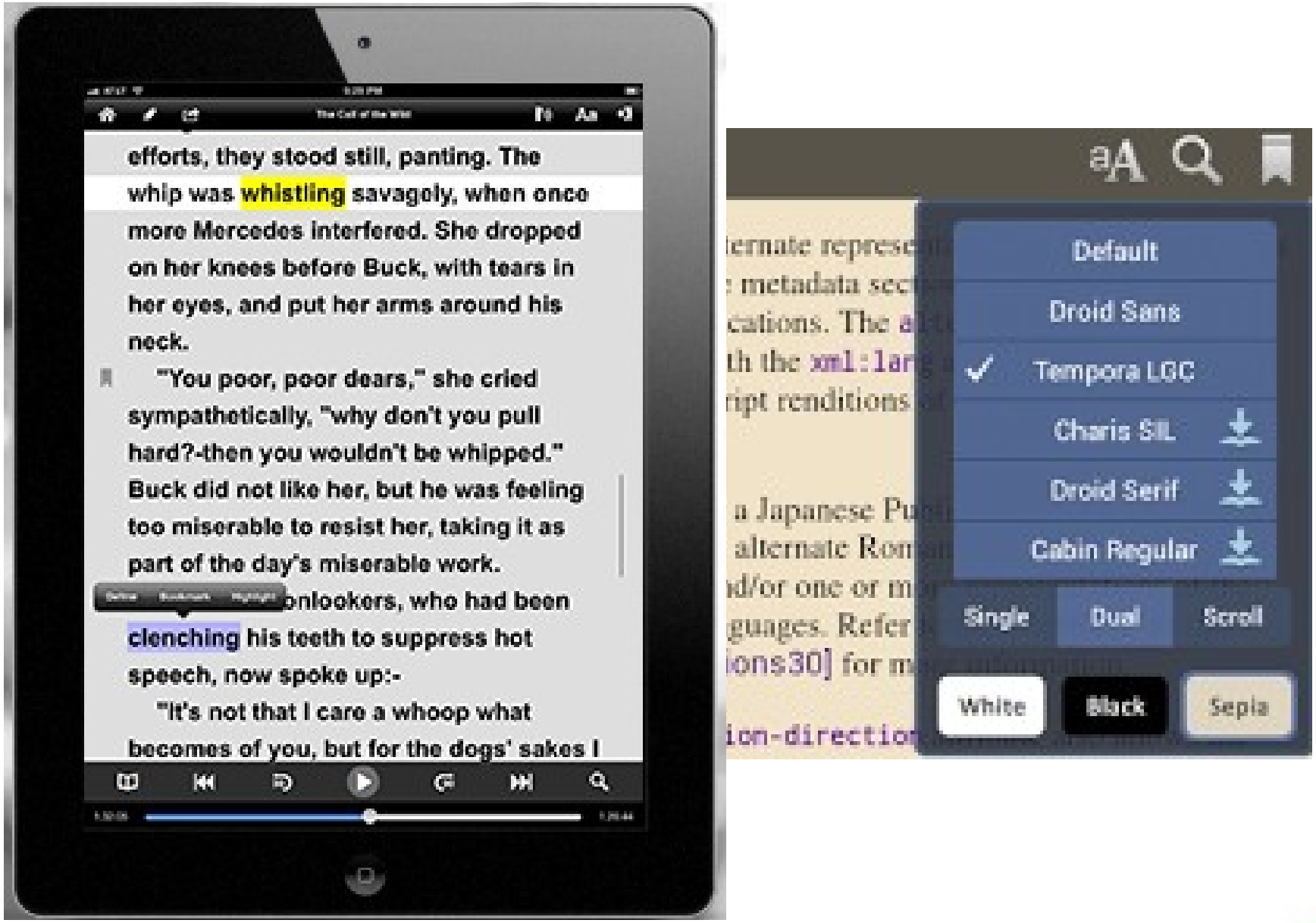
- Text to Speech
  - Varied quality
  - Best implemntations (Moon+ Reader Pro, VoiceDream Reader, and ezPDF Reader)
  - Buggy implementations (FB Reader, Cool Reader)
- Online book repositories (Free, commercial, specialised – e.g. Bookshare)
- Multiple format support

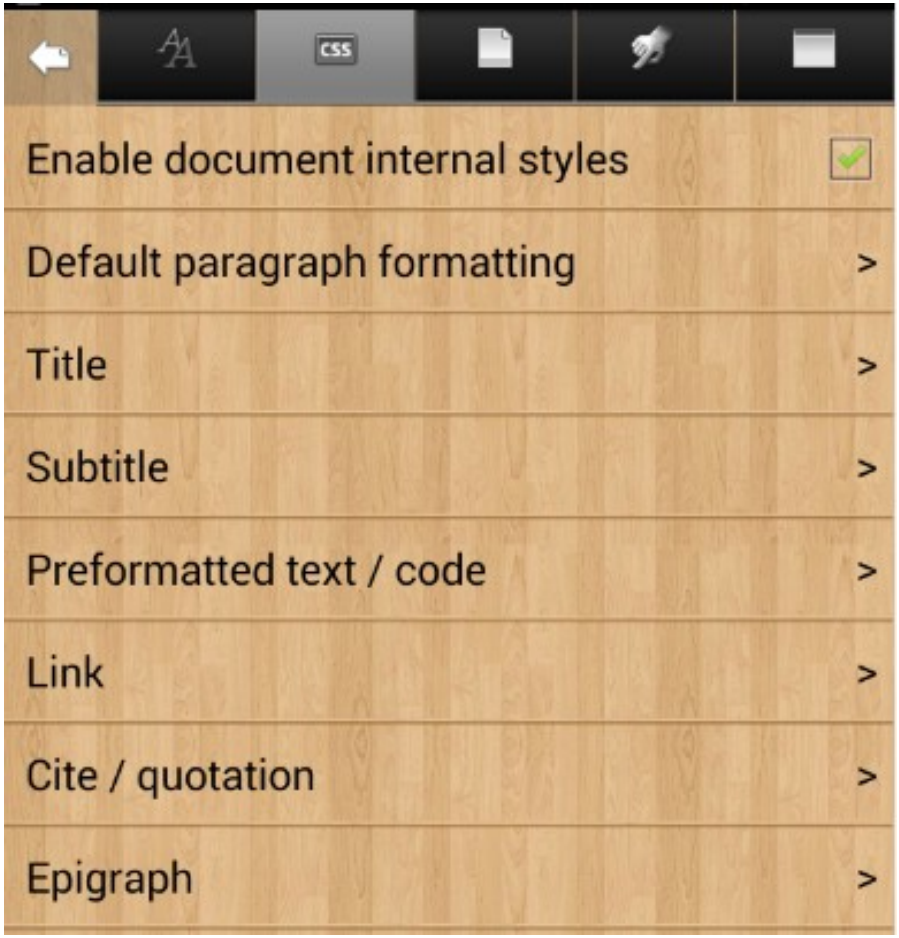
Rare features

- Adobe ID (for library loans access)
- Plug ins (FB Reader and Cool Reader)
- Chunking and autoscroll (AutoReader and Speed Reader)
- Rolling blinds

Usability vs features

- Feature rich
  (FB Reader, Cool Reader)
- Design and features
- Minimalist
- Design focused (Voicedream Reader, Bluefire reader)


efforts, they stood still, panting. The
whip was whistling savagely, when once
more Mercedes interfered. She dropped
on her knees before Buck, with tears in
her eyes, and put her arms around his
neck.
"You poor, poor dears," she cried
sympathetically, "why don't you pull
hard?-then you wouldn't be whipped."
Buck did not like her, but he was feeling
too miserable to resist her, taking it as
part of the day's miserable work.
onlookers, who had been
clenching his teeth to suppress hot
speech, now spoke up:-
"It's not that I care a whoop what
becomes of you, but for the dogs' sakes I
Default
Droid Sans
Tempora LGC
Charis SIL
Droid Serif
Cabin Regular
Single
Dual
Scroll
White
Black
Sepia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Title
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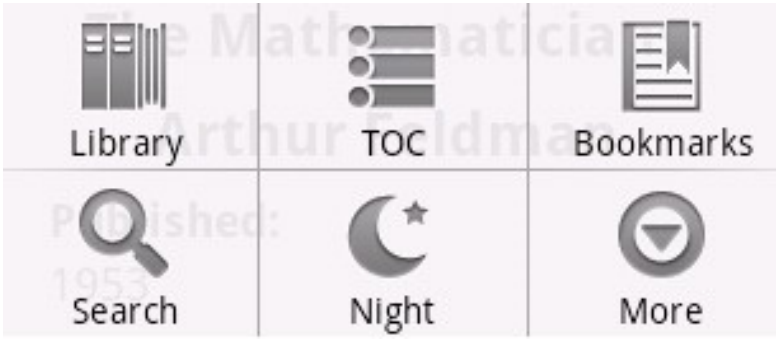
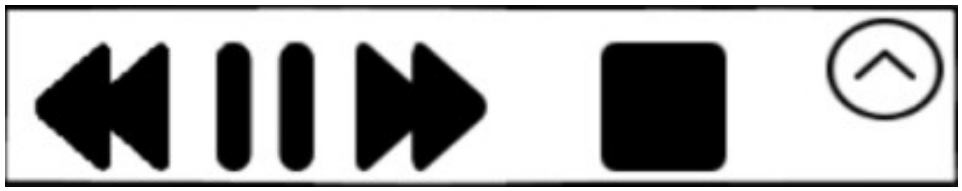

Library
TOC
Bookmarks
Search
Night
More

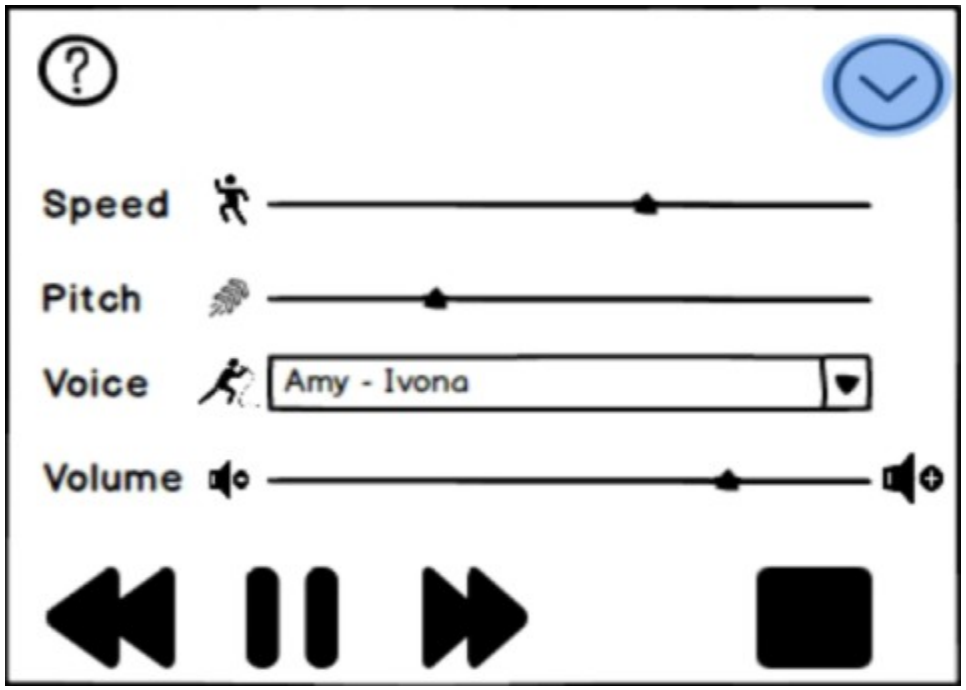

Rate:
Pitch:
Volume:

5 General Recommendations

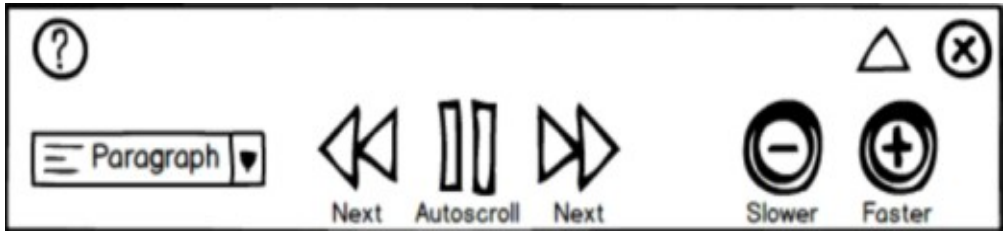
1. Focus on usability and clean interface
2. Balance feature completeness with the accessibility of key features = presets
3. Use icons, sliders + steps.
4. Text-to-speech is essential to accessibility and must be implemented reliably and provide basic navigation features.
5. Controlling the amount of text displayed on screen + autoscroll

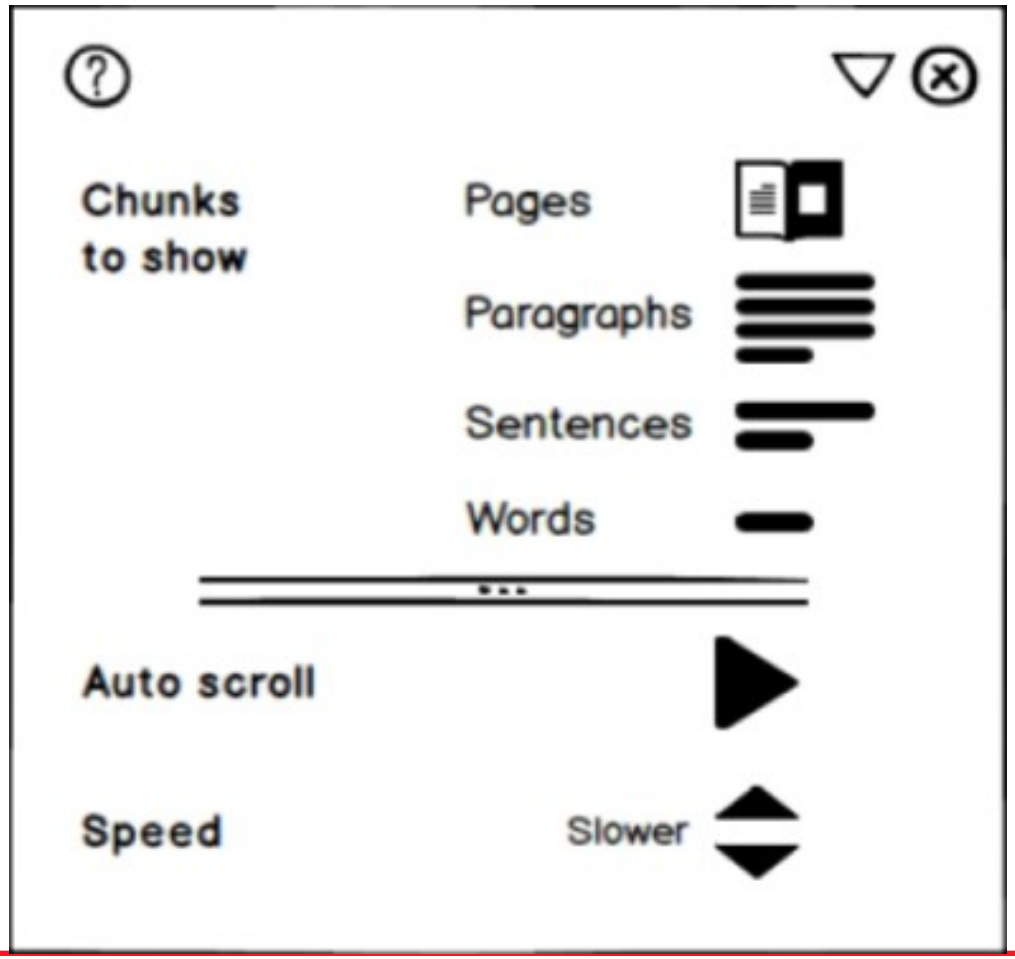
Text to speech



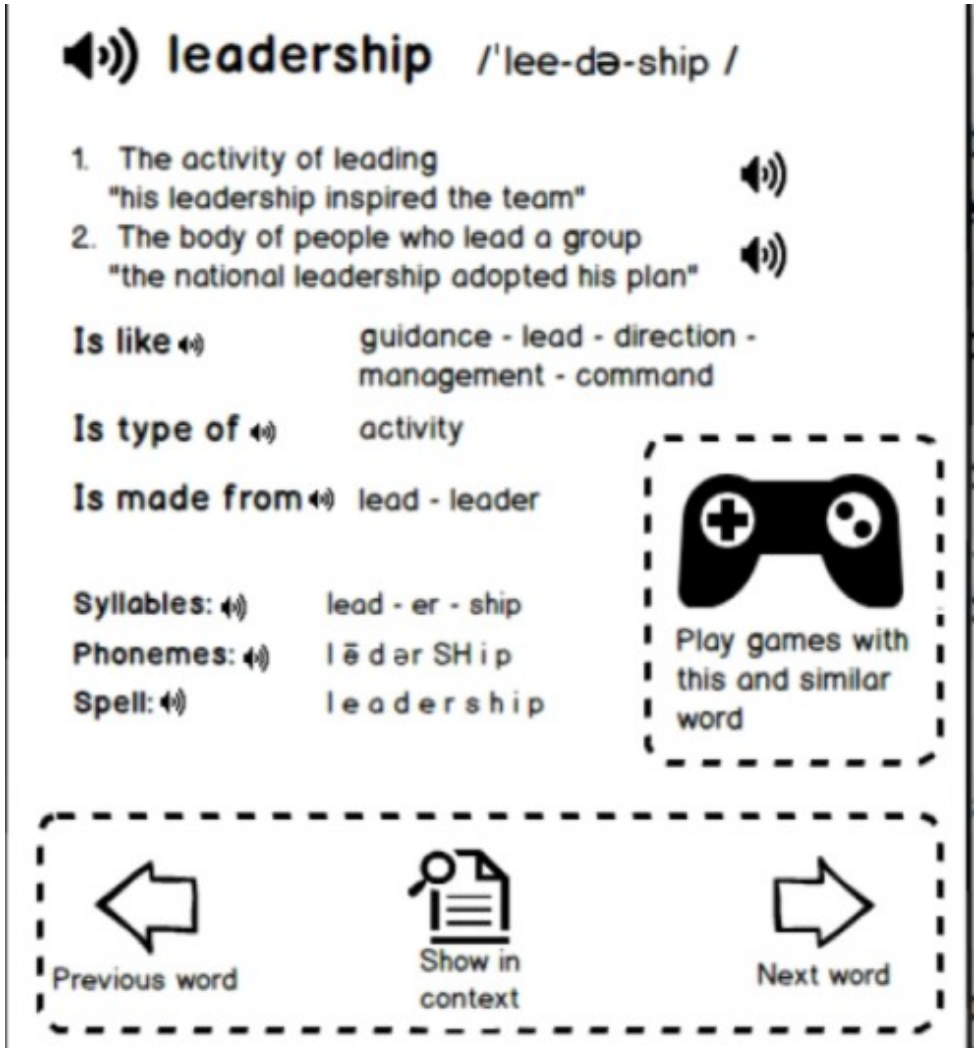


Chunking

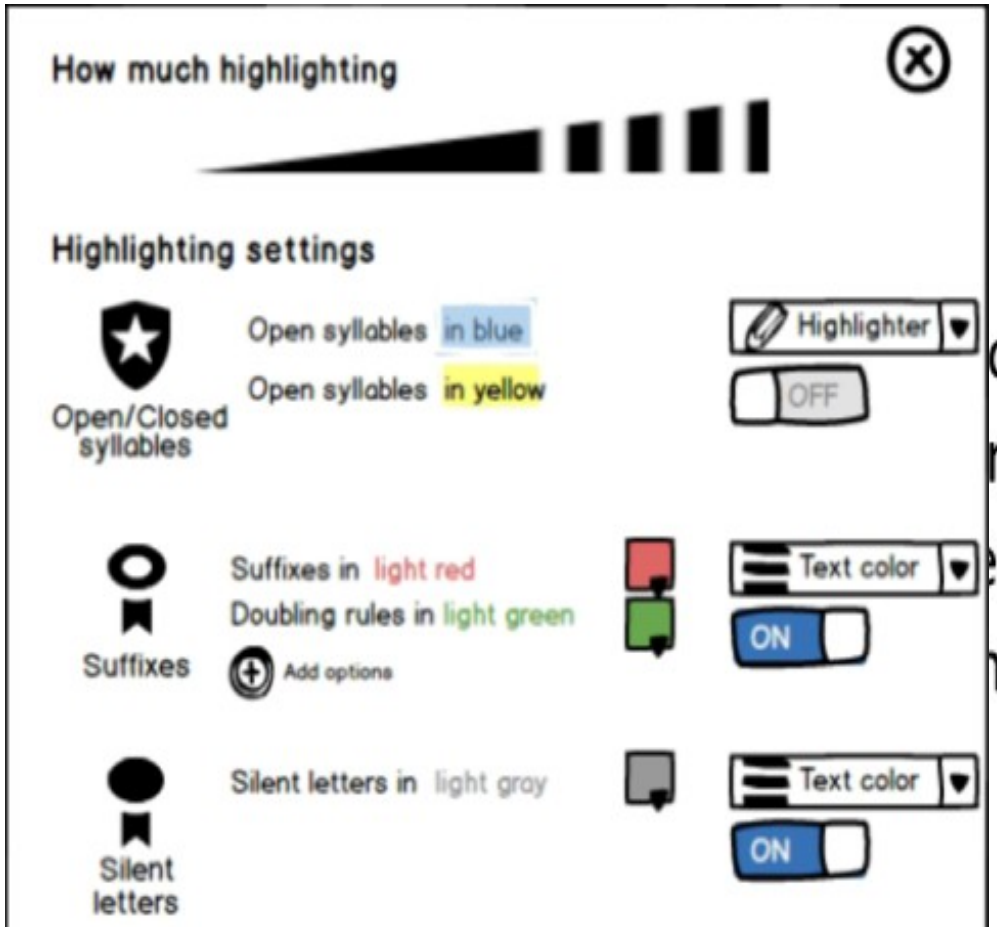

Paragraph
Next
Autoscroll
Next
Slower
Faster


Chunks
to show
Pages
Paragraphs
Sentences
Words
Auto scroll
Speed
Slower

Guidance mode: Word support

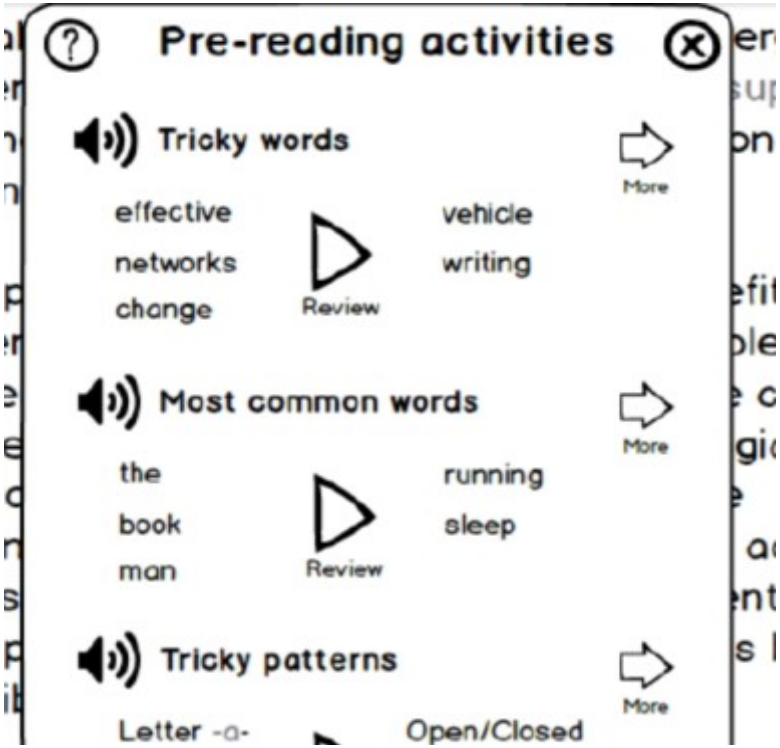


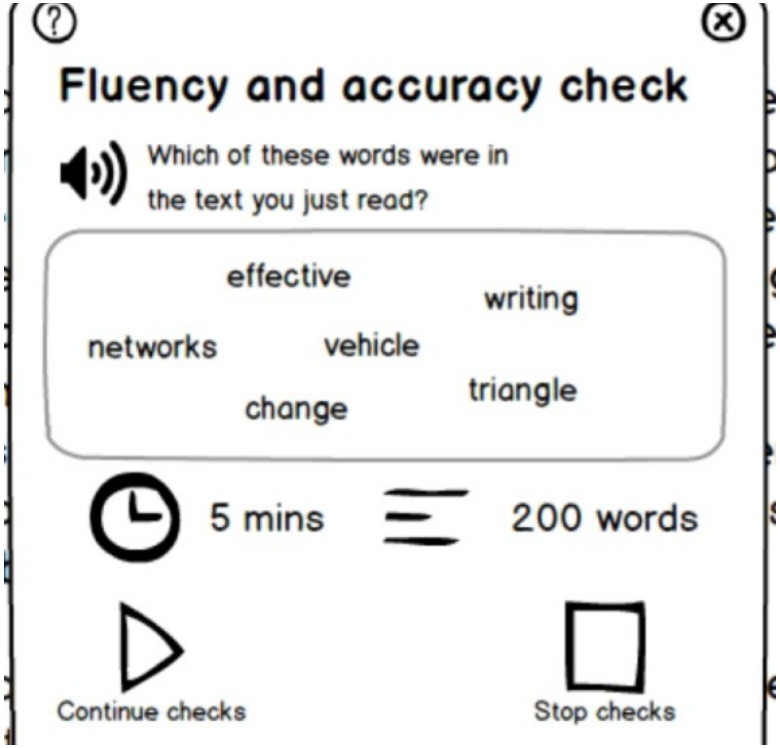
Guidance mode: Text highlighting



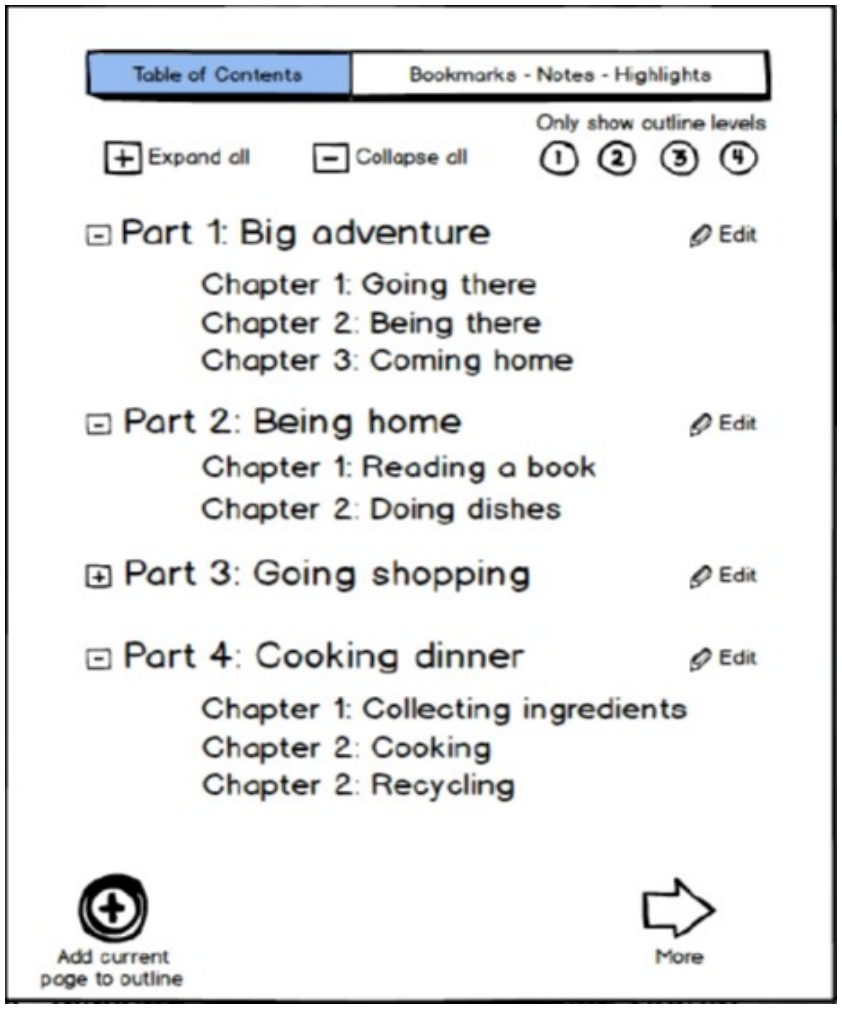
ooks on her tablet. She sits
rnoon and reads a story.
r John fell over their cat.
nd she dropped her tablet.

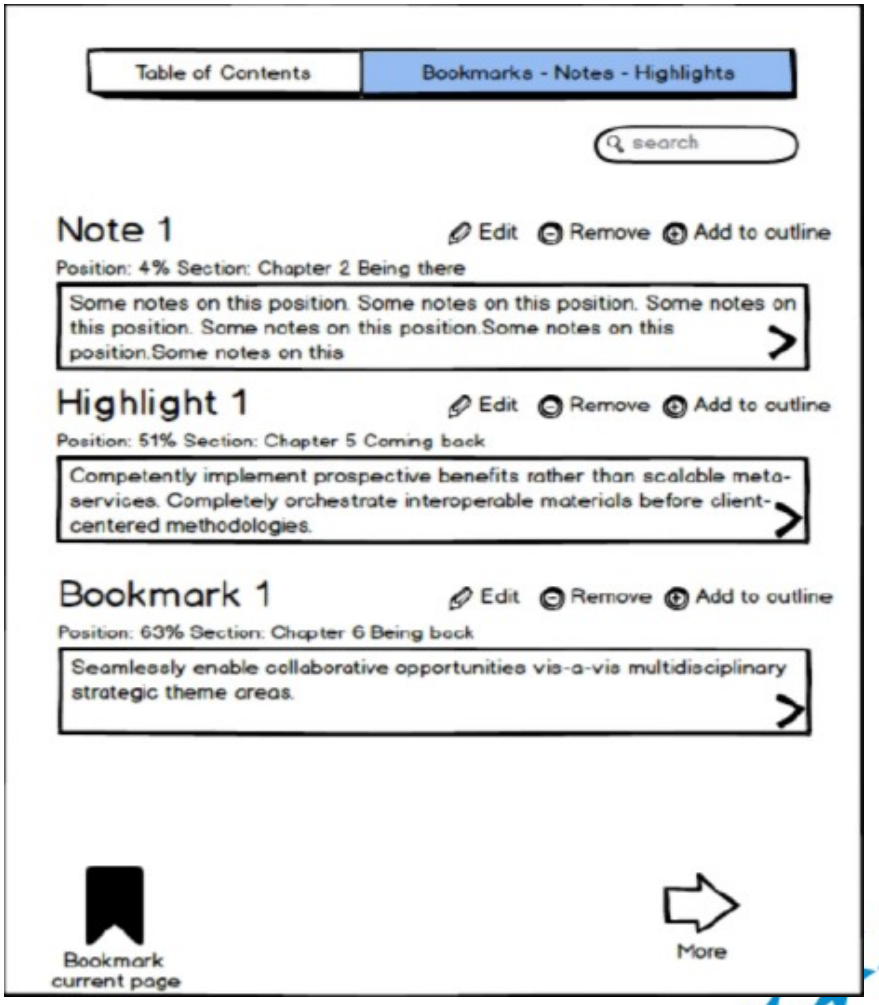
Guidance mode: Pre-reading activities



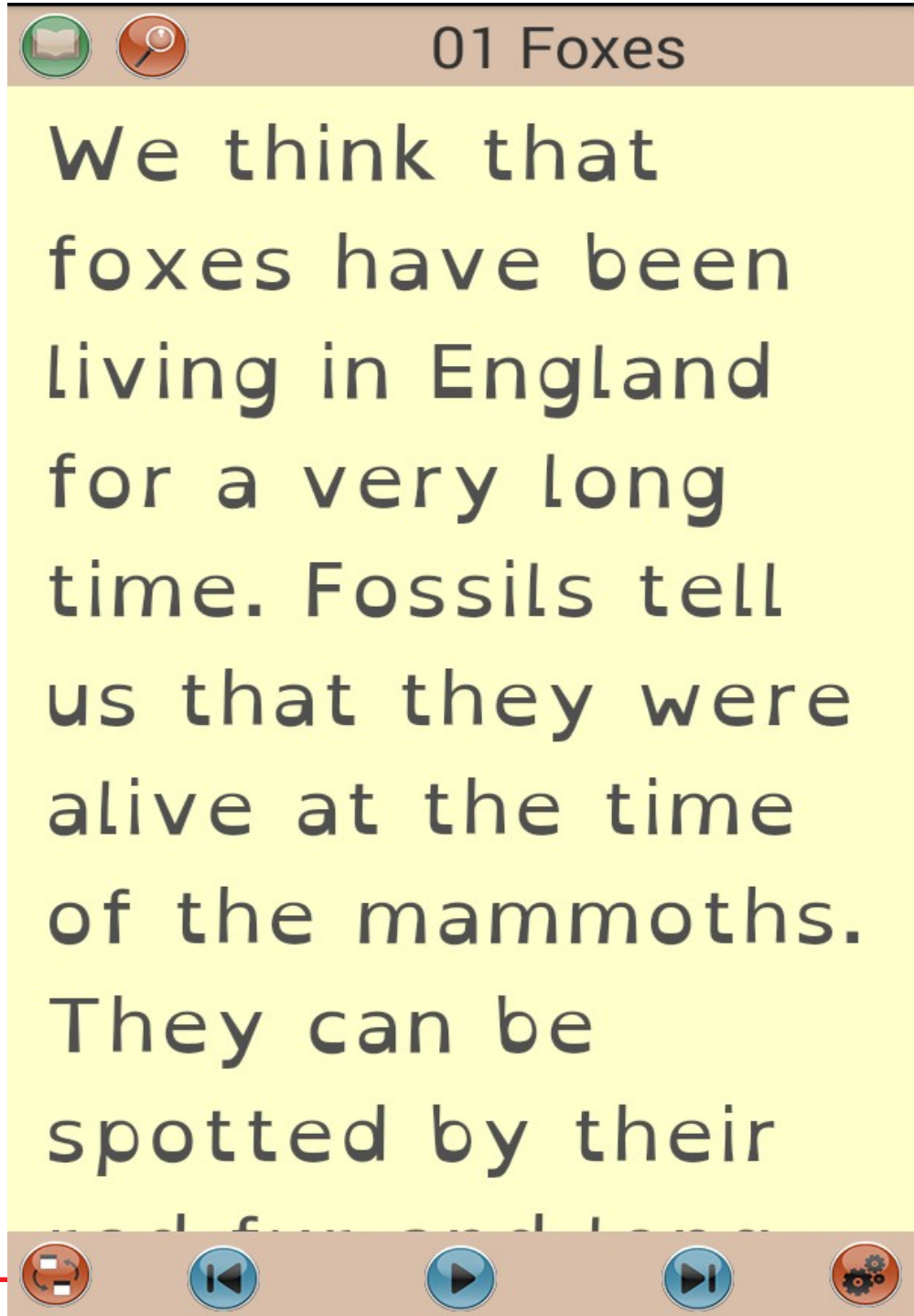


Structure and navigation

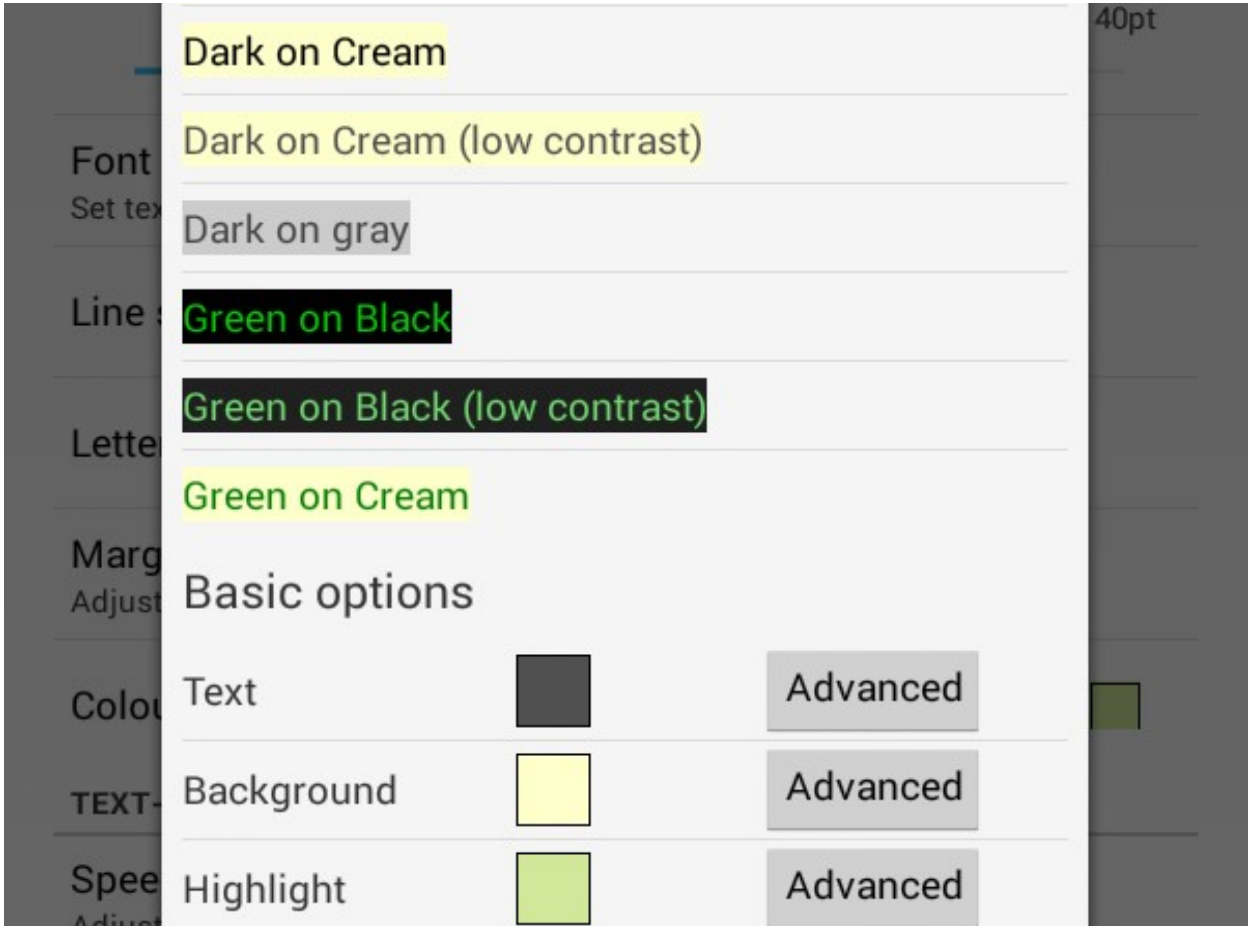




Reader prototype



Prototype presets



Preliminary study

- Presented to 60 students 9-11 in 5 English schools and two through Dyslexia Action centres
- Prototype reader pre-loaded with short texts
- Reading in class (groups of 5)
- Tablet home use
- Some students progressed to Moon+ Pro

Preliminary study results

- Overall positive reactions from students
- Playback functionality immediately utilised by students
- Most students claimed to have used the reader at home, some regularly. This is an increase over their regular reading patterns.
- During sessions, students were able to answer questions about the text they read, some volunteering more information.

Preliminary study results (Cont.)

- Students varied in the mode they preferred to access text. Most used text-to-speech at least part of the time. Some before or after reading without it. Several only read without sound.
- During sessions, sometimes students would switch from playing games to using the reader. Several calling it the ‘reading game’.
- Several students admitted to listening to the texts in bed, one to falling asleep to them.

Preliminary study results (Cont.)

- One student described taking the tablet when visiting family members and listening while they watched “boring shows”.
- Several students attributed their reading improvements to using the reader.
- Many students appreciated the factual nature of the texts included but some asked for fiction.
- One student admitted that even though he preferred Audible, he still listened to the texts.

Preliminary study results (Cont.)

- Several students asked for more texts having read all those provided (the reader came bundled with about 80 texts of 300-500 words). When asked, students in one school generated a list of over twenty books they would like included with the reader.

Conclusions

- Significant accessibility and usability gaps in current reader apps (even those with accessibility focus)
- Speech focused reader have a huge transformative potential for struggling readers
- Readers without full implementation of text-to-speech cannot be seen as accessible
- Other features still need more research
- Gaps in the chain of text discovery, text acquisition and reading

Next steps

- PAIR (Producing Active and Independent Readers) – project by Dyslexia Action to introduce reading with tablets to schools
- Working with reader app producers to incorporate some of these features
- Working with document repositories (Load2Learn, Bookshare to integrate with reader apps)

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