WESTED | BEELINE READER RESEARCH STUDY

1. Overview

In Fall 2018, WestEd carried out a research study to assess the BeeLine Reader educational tool. This controlled study produced detailed feedback from educators, as well as an analysis of changes in reading ability among students. The study demonstrated that reading with BeeLine Reader produced positive results in several regards, including:

1. educators' observations of increased student engagement with reading
2. student preference for reading with BeeLine Reader over traditional reading formats
3. quantitative improvements in student reading comprehension.

While use of BeeLine Reader's browser plugin in combination with ELA platforms was deemed relatively easy, a key suggestion for improvement was that BeeLine Reader should be natively integrated into reading platforms instead of being provided as a separate plugin.

2. Background and Methodology

BeeLine Reader is a software tool designed to make reading on-screen easier and more efficient by applying a color gradient to text, which wraps from the end of one line to the beginning of the next. These line-wrapping color gradients are designed to improve visual tracking, enhance focus, and make the reading process more cognitively efficient.

NewSchools Venture Fund (NSVF), which provides funding for educational research on promising educational technologies, funded a research study performed by WestEd, an independent educational consultancy. BeeLine Reader was one of 15 startups selected by NSVF in May 2017, and the study was carried out in September-October 2018. BeeLine Reader did not provide any funding or compensation to WestEd, who designed and carried out this independent research study.

In this study, WestEd evaluated the impact on reading ability among 530 seventh grade students in northern California that used the Newsela platform either with (Intervention) or without (Control) the BeeLine Reader web browser plugin.[1] The study lasted four

[1] Available at https://chrome.google.com/webstore/detail/beeline-reader/ifjafammaookpiajfbedmacfldaiamgg?hl=en

weeks. Before the study onset, a pre-test of reading comprehension was administered, and following the study period a post-test was administered. Changes between pre-test and post-test scores were analyzed to evaluate the impact of BeeLine Reader.

During the four-week study period, students used the Newsela platform (either with or without BeeLine, depending on their group) three times per week, with sessions lasting around 15 minutes.

During the pre- and post-tests, the students in both groups were shown two passages and presented with six reading comprehension questions following each passage. The testing platform silently recorded the amount of time spent reading each passage, as well as the number of correct answers. These data allowed for comparisons to be made between the students' reading comprehension scores.

WestEd also gathered feedback from all of the 530 students and from the four middle school teachers[2] in the Intervention Group to understand how students reacted to and were impacted by BeeLine Reader.

3. Key Insights

a. Educator Analysis

WestEd received qualitative feedback on BeeLine Reader from two sources: the teachers involved in the controlled study, and seasoned special education teachers who were selected to separately analyze BeeLine Reader's tools and provide in-depth feedback.

Feedback from educators was very positive. Educators praised BeeLine Reader's tools for being intuitive and easy to install and use. In contrast to many complicated edtech tools, educators noted that "*ease of use is a strong positive for BeeLine Reader*," and it is usable by "*anyone familiar with the most basic clicking and toggling*."

Educators also found BeeLine Reader to be an effective tool that helped both strong readers and readers with reading challenges:

- "*The color gradient allowed for faster, more accurate reading, [which] keeps readers focused and allows for better comprehension*."

[2] In total, eight teachers participated in the study. Teachers and their classes were randomly assigned to either the Control Group or the Intervention Group.

- "*[students with strong reading fluency] improved their reading comprehension. They were able to describe the stories and passages in more detail*"
- "*BeeLine was a motivating factor [for a student with dyslexia] to continue reading*."
- "*It helps with attention. Certain students who would typically close their books were still reading with BeeLine. While they were using BeeLine they were reading and not wandering off*."

b. Student Preference

As part of the study, students were asked if they found BeeLine Reader's color-based approach to be helpful for them. Almost two-thirds of students (61%) indicated that BeeLine Reader's approach was helpful. This strong preference was consistent across both the Intervention Group (who were asked after having used BeeLine Reader for four weeks) and the Control Group (who were shown BeeLine during the post-test and immediately asked for their opinion).

Interestingly, even the *teachers* in the Intervention Group ended up using the BeeLine Reader browser plugin on their own computers during the study, which further supports the notion that BeeLine Reader's color-based approach is useful for a broad range of readers, including skilled—and even adult—readers.

c. Research Study

The quantitative data from the pre- and post-tests were consistent with the teachers' and students' impressions of BeeLine Reader's usefulness. The reading comprehension scores of the students in the Intervention Group increased during the course of the 4-week study, whereas the scores of the Control Group dipped slightly, indicating that the post-study test material was slightly more difficult than the pre-test material. Overall, the reading comprehension scores of the students in the Intervention Group increased by 7.3 percentage points more than those in the Control Group.

4. Recommendations

Teachers made clear that they valued the impact BeeLine Reader had among their students, both in terms of increasing engagement and interest in reading and in actually empirically improving reading comprehension.

In terms of implementation, the primary teacher recommendation for BeeLine Reader was that the functionality be offered natively within Newsela, electronic textbooks, and/or other reading apps/websites:

- "*I would love the option of just having BeeLine Reader available on an ELA platform.*"

Such an integration would allow students to access the feature without having to install any additional software (which sometimes requires IT approval/involvement), and it would make the feature available across all device types including mobile (which do not support browser plugins like desktop). Some popular educational platforms, including Blackboard Ally (a subsidiary of Blackboard, Inc.), Bookshare and Reading Is Fundamental, already offer the BeeLine Reader functionality. However, most reading platforms, such as digital textbooks and ELA platforms, do not offer this or any similar functionality.

5. Conclusion

Students and teachers alike found BeeLine Reader to be simple, useful, and effective. Educators found it to be helpful for both skilled readers and for readers who have learning differences. The student preference data indicates that BeeLine is a tool that would be widely used by students, and the reading comprehension scores reinforce the students' and educators' positive impressions about the technology.