



STORYWORLD Multimodal Bilingual Platform and Formative Evaluation Dashboard for English Language Learners

Research Highlights, June, 2019

- **Statistically significant differences between the classroom's score changes from pre to post**
- **STORYWORLD is highly engaging for students**
- **Gamification engendered friendly competition among peers and motivated students**
- **Students cooperatively helped classmates**
- **STORYWORLD product would be a very useful tool in classrooms**
- **STORYWORLD could be integrated into the curriculum for ELA or ELL support**

Overview of study

As part of the Small Business Innovation Research grant, awarded by the U.S. Institute of Education Sciences, STORYWORLD developed a multi-modal reading platform and formative evaluation dashboard to 1) assist English Language Learners (ELL) with reading, writing, speaking and listening to English, and 2) provide teachers with actionable data to assess overall language proficiency by student and by class. WestEd conducted an independent evaluation of the STORYWORLD e-book's feasibility for classroom use and its ability to impact the attitudes of ELL students regarding reading.

To explore the feasibility and usability of the STORYWORLD platform, WestEd conducted a feasibility study in the Spring of 2019 in 1st and 2nd grade classrooms. This work builds on the usability testing conducted in previous studies on the STORYWORLD product including, two rounds of student platform usability testing and one round of teacher dashboard usability testing. In this study, all teachers were assigned to use the STORYWORLD platform as a supplement to their ELA or ELL instruction.

Conclusion

The results of the ANOVA showed that **there were in fact statistically significant differences between the classroom's score changes from pre to post**. Overall, the mean total scores of participating students on both the Self- Concept as a Reader and Value of Reading sub-scales increased after two weeks of using the STORYWORLD product. The Self- Concept scale had an average increase of 1.2 points, whereas the Value scale had an average increase of 4.6 points. The increase on the Value scale was **statistically significant** with a p-value of less than .001.

One consistent finding across the feasibility study (as well as prior usability studies) is that **STORYWORLD is highly engaging for students**. Students eagerly read multiple books in a single session, going beyond the prescribed requirement of only one book. The **gamification aspects of the platform engendered friendly competition among peers, motivating the students** to retry the e- book and improve their score. Students also cooperatively helped their classmates in a positive attempt to assist ones who were struggling. STORYWORLD was a positive reading experience for students and it reflected in the potential for improved attitudes from pre-to-post intervention. Teachers also appreciated using STORYWORLD as a supplement to their curriculum, indicating that it served as a fun way to integrate more reading practice into a student's day.

Teachers articulated that the **STORYWORLD product would be a very useful tool in their classrooms** and could be integrated into their curriculum for ELA or ELL support.

Classroom Usability

The most prominent ways in which teachers implemented STORYWORLD included: using STORYWORLD as a whole class activity in the computer lab, using STORYWORLD as a language support in a small ELL group within the main classroom, and using STORYWORLD as an afterschool reading intervention class support. The STORYWORLD platform seemed feasible in all three of these classroom models, showing the flexibility of the product in multiple classroom contexts.

Modality Usage

The listening modality garnered a positive response from the teachers overall. While the lack of microphones, correct icon usage, and full volume speaking may make usage of the speaking modality more difficult in a classroom environment, students still desired to make full use of the functionality.

The writing function was the most challenging of the four modalities for the students of this age group. [Some] students labored to use the functionality mainly because 1) they did not know how to type; 2) they did not know how to spell; 3) they did not know how to write their name; or 4) they were unsure what to write.

However, the challenge of the writing modality also had unforeseen benefits.

One teacher observed that the text box space even helped one of her lowest performing students to advance his writing ability:

“My lowest performing student, the one that can least pay attention, he really doesn’t produce much at all. But he is really loving typing on the computer. I was shocked to see his answers because when we sit for 45 minutes and we do writing, I’ll be lucky if I get a sentence. But just sitting there for 5 minutes [with STORYWORLD] and there he is writing a whole sentence, and I’m like, ‘Whoa.’...Even tech writing that I have set up, he has a hard time following all the different steps. But I think STORYWORLD was consistent enough and understandable enough for him that he didn’t have trouble.”

Integration into School Curriculum

One teacher reported, “I was able to see what words they clicked on to maybe delete it or maybe to understand the meaning. I think it is a really good tool so you can go over those words, include those words that they have clicked on in your daily vocabulary so they can get the meaning...It can [also] help you with the lesson plan because you can look at the chart, at the graph and you can identify what skills you need to work on.”

Another teacher reported: “Well, I also liked seeing the writing. That was telling too. Who punctuated and who had correct grammar usage and all of that....it would be useful for me to go back and say, ‘Oh yeah, they were a three in September and look at them now, or they were a two in September, but now they are punctuating the sentences.”

While the individual book content did not conform specifically to the existing curriculum, the teachers appreciated having a fun way to integrate more reading practice into each student’s day. One teacher commented, “In general, when I teach reading, all the [STORYWORLD] books are great. It’s just exposure to another book.”

Another teacher explained that she “liked that STORYWORLD engaged all four modalities. It uses all of the skills that we practice with the students all of the time.”

Student Engagement

Student engagement was **extremely high** across all classrooms. Students read the books enthusiastically, in some cases clicking specific words to hear the audio re-read to them. Because students found the content highly engaging, researchers did not observe any students being off-task while using the STORYWORLD e-books. Many students worked independently and only spoke with a neighbor or teacher to give or receive assistance with quiz questions. Many students chose to read more than one book in a single session and relished getting a high point value on the gold star at the end of each e-book. The teachers appreciated that the platform inspired renewed interest in reading.

Many students looked at their quiz scores and were proud of their performance. The students seemed to enjoy getting the point score at the end of the e-book and acknowledged their scores out loud. Other students came over to see their classmate’s point performance and voiced approval or disapproval accordingly. One teacher reported, “I think they really enjoyed it. I always see smiles on their faces, and I would hear things like ‘Yes! I got a point!’ Yeah, I think they were very engaged.” Another teacher cited overhearing examples of point-value enthusiasm including students saying, “Yay, I got 60 stars!” or “I have 100 stars!” A third teacher said, “Generally speaking, they really enjoyed reading the stories. They loved the points and the sounds in the quiz and being able to

improve their score.” Students appeared motivated to do well on quiz questions to socially share, compare and improve their score performance versus that of their classmates.

The STORYWORLD platform also sparked group collaboration. In some cases, students helped each other if they were unsure how to progress with a quiz question. A researcher observed a student on a writing question, and the student’s neighbor answering a similar but unrelated question in a different book. The first student seemed unsure what to write. Both students paused for a moment, then the two discussed what to do next. After a brief deliberation, the first student typed, “The little brother” and the second student wrote “I put the trash”. In another classroom, a researcher noted two students sitting side-by-side answering the same question for the *My Day at the Zoo* story. The two whispered briefly to each other and at the conclusion of the consultation, each started to type on their respective screens, “I like the part of the story when my little brother was swinging like a monkey...” and “I like about the story wen the liter brother”. The first student pointed at her classmate’s screen and made a verbal correction in Spanish. The second student took the feedback under advisement and corrected “wen” to “when”. The second student finished her sentence with “I like about the story when the liter brother was swinging.” Both students clicked ‘Send’ to submit their written quiz responses. Teachers who observed this type of behavior welcomed the collaboration, cautioning only against plagiarism.

One teacher explained, “I would find some of them were like, ‘Oh, you’re on that story? Let me get on that story, too!’ I’d be like, ‘Okay guys, but don’t try to share answers. It’s your own ideas.’ But they would get excited and try to help each other...”

Student engagement was particularly exemplified by the students’ voracious appetite for STORYWORLD e-books. While only required to read one book per setting, many students chose to read more than one book, citing excitement about the content. During the second week of implementation, one student said, “Teacher, I’ve already read all of the books.” The teacher responded, “That’s okay, you can read one again.” The student excitedly replied, “A Potato!”

Two more teachers commented, “I just appreciated the engagement at the end of the year. Students get burned out and this was something new that they enjoyed. In fact, most of them had finished reading all the stories and they were like, “We want more!”

(See below for two student vignettes.)

2 VIGNETTES (shared by WestEd researchers in the report)

Student Vignette

Student persistence through difficulty

Student #1, a male first grade ELL student, significantly struggled with the “Wow! A Potato!” book. While his struggle appeared difficult, his effort bore fruit in the form of reading comprehension. Student #1 struggled with typing; he struggled with spelling; he used backspace to re-type his idea. He re-typed it again, and again. He had technical challenges because a superfluous window popped up on his screen and blocked his view of the page advance button. Student #1 stopped multiple times because he was stuck on how to express his idea on the quiz question pages. He wrote “the ptad”, then revised it to “ptaoe”, then to “the ptadoe grow”. Finally, after much effort, he was satisfied with his last version, “I like that the potato grow”. Student #1 struggled for a long time to write this single sentence. He progressed and struggled on other quiz questions too, and likewise was challenged by the last matching format question. However, he persisted through all of it without any assistance from the teacher. In total, Student #1 spent 30 minutes to complete the “Wow! A Potato!” story and quiz questions.

When Student #1 was finished, the teacher asked him what his favorite part of the STORYWORLD e-book was. Student #1 responded, in a very small voice, “It takes a long time [for the potato] to grow.” Despite the challenges, Student #1 did not communicate a disdain for or dissatisfaction with the e-book. Instead, his favorite part was a reflection of his appreciation for understanding “Wow! A Potato!”.

Teacher Vignette

While all of the teachers were very complimentary about the STORYWORLD platform, one teacher had a notably exceptional comment to share. She noted,

“STORYWORLD is like having kids in a guided practice reading (GPR) group. It provides speaking, reading, writing and listening practice -- matching all of this back to your first language, but one-on-one with a computer. It models what a teacher does in a teacher group. The students answer questions, read back portions of the story, understand vocabulary, retell the story in their own words and provide a written question response. It goes deeper on a story than an Accelerated Reader® would and provides more aspects to a story than multiple-choice...It reminded me a little of Rosetta Stone® . I’ve never seen anything that is English-to-Spanish like this, and I’ve been teaching in 1st grade for 16 years!”