Case Study:
Assistive Technology (AT) Improves Literacy Skills for English Language Learners (ELL)

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QUOTES

"We tell students there are no levels in reading classes. It was evident to students who struggled that they were put into different reading groups. How does this scenario play out into a student's view of himself as a learner?"

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4th Grade Teacher

In 2007-08, I worked as a paraeducator at Candlewood Elementary School as part of my masters program, teaching ELL/ESOL students. In my classes, learning appeared to be an endless battle between what my students were expected to gain by reading books and what they actually understood. My biggest challenge was that many ELL/ESOL students were able to read fluently (even out loud), but did not *understand* what they read.

I worked with some teachers who said these students were lazy and did not pay attention. This puzzled me. Didn't reading mean that if students could say the words, they could also understand what the words meant? Even when students could demonstrate oral comprehension, many were unable write what they just articulated. For the next two years, I examined ways to improve the reading and writing skills of my elementary ELL/ESOL students. Here is an excerpt of my research and observations.

Using Assistive Technology Literacy Tools

Prior to my research, I learned to use the SOLO Literacy Suite, which includes four assistive technology tools: Read:OutLoud, an accessible text reader with reading comprehension support; Co:Writer, a word prediction tool that helps students write with correct spelling and grammar; Draft:Builder, a graphic organizer and Write:OutLoud, a talking word processor.

While learning to use these tools, I worked with second and fourth graders in a general education setting. These students used Read:OutLoud and Co:Writer in our learning instruction with fifth graders who had trouble reading and writing. With these AT tools, students appeared to read with more comprehension and write with a greater command of vocabulary compared to initial assignments completed without the tools.

From this experience, I chose SOLO for my digital fluency research to answer the following questions:

1. Would the use of the assistive technology (AT) in small groups improve the reading and writing skills of low to mid-level readers?
2. Could a text reader (Read:OutLoud) improve reading comprehension?
3. Could the use of AT tools improve students' attitudes towards reading?
4. Could the use of supportive writing tools (Write:OutLoud and Co:Writer) increase writing quantity and improve writing quality?

Research: Reading and Writing with e-Text

"Students tracked me down to make sure I came to the lab to help them use the assistive technology tools. What a great feeling to know that I am having an impact with my students!"

Working closely with third graders, Level 3 ESOL, students completed fifteen weeks of informational readings using e-text. Since Read:OutLoud can read text from the Internet, we used the Kids Lab website (http://www.english-4kids.com/kidslab.html) as part of our program. When possible, I integrated science and social studies units. This was contingent on my ability to create e-text or find suitable content for students. Although there was a plethora of e-text available, much of the text I found was written for high-level readers. Our class talked about how good readers engage in the thinking process as they read. I taught my students how to use reading strategies to control and self-regulate their learning. We discussed what good readers do and how they weave their personal experiences with what they read to actively construct meaning. We discussed rereading text as a strategy and to listen to books on tape while they read text from a book. The audio text-to-speech with visuals helped my students read with comprehension. (Parlato, 2002; Skouge, 2007; Waxman, H.C & Tellez, K., 2002).

During my research, as students read more e-text, their comprehension skills improved. They produced higher quality work and showed increased motivation using Read:OutLoud. When students were given time to learn to use the software, their skills and attitudes improved. They were excited to learn and participate. It was clear that the students who were introduced to good reading comprehension strategies were trying to use the strategies as they read.

For the ESOL writers in my research, translating thoughts into writing was overwhelming at first. Their writing often suffered from phonetic or inventive spelling, lack of richness, limited detail, and incoherence. When the students used Co:Writer word prediction, their writing improved quickly. Their attitude also shifted from frustration to excitement and confidence.

Student Results

Three ESOL students quickly navigated through SOLO to write their papers. They took notes and organized their thoughts in Draft:Builder. During their lab time, they assisted other English-speaking classmates. These students became the class experts using the assistive technology tools. As they worked through the technology learning curve, they became more independent and needed little supervision. This technology 'know-how' opened more learning opportunities for students versus being taught in a conventional classroom. Students became adept and focused on reading comprehension and writing. I believe this knowledge also helped to improve their self-esteem.

Student Technology Attitude Chart: Journal Entries

Data gave me a sense of where my students were performing academically, but did not give me an idea of how they *felt* about reading and writing through the use of assistive technology tools. To obtain a perspective, I kept a journal of anecdotal entries of my students' experiences. Here are a few journal entries:

(Anecdotal record, 1/27/08)

'J' was asked to write a brief constructive response (BCR) to the nonfiction text that he had just read in Read:OutLoud. Typically, he would have a teacher help him produce words on the page, but this time he used Co:Writer. I gave him instructions and walked away. When I returned, *'J'* had already written an entire paragraph. When I asked about using this tool, he replied, "This is cool!" I had never seen this student produce so much text in five minutes in all the years I'd known him. I quickly shared the results with his classroom and reading teachers. Using Co:Writer, his written work became more verbose and fluent.

(Anecdotal records, 1/29/08)

'P' was born in Japan and was enrolled in the ESOL program at a Level 3. The language spoken at home was Japanese. He traveled to Japan each summer and often missed the first month of school. *'P'* was in the below grade level reading group and in the above grade level math group. His teachers and parents felt that his academic performance directly correlated to his language acquisition. *'P'* had the largest growth in his MAP-R score using these assistive technology tools. He went from being at less than proficient to proficient. His score increased 23 points.

(Anecdotal records, 2/5/08)

Students used headphones with the Read:OutLoud accessible text reader and these three boys were exuberant. They said, "This is really fun!" "I like doing this." "How come we only get to do this three days a week?"

'C's' native language is Chinese. He has been a Level 3 ESOL student since 2nd grade. He was shy and rarely participated in discussions. *'C'* often missed assignment deadlines. I was curious to see if the SOLO tools would help him gain confidence. *'C'* started to participate in class discussions and was able to finish his assignments on time.

Season/Year	Student Score Range	District Average RIT	Norm Group Avg	Student %ile Range
W08	198 – **201** - 204	201	194	56 – **65** - 75
F07	198 – **201** - 204	195	190	68 – **76** - 85

MAP-R Results

'PT' was born in Iran and spoke no English. He was in the below grade level reading group and on grade level in math. *'PT'* mentioned that his friend *'C'* was a good reader because of his reading class. His enthusiasm for using the software was evident when I asked him about how it helped him read and write. *'PT'* showed significant growth in his RIT (Rausch Unit) score. He is now within the expected range for his age group and in the middle of the proficient performance level. His RIT score increased 16 points.

(Anecdotal record, 3/4/08)

The group used the Marc Brown online text today. One student said, "Hey, I've read this article before." *'PT'* said, "Yeah, but this is more fun." *'C'* remembered the story too. They all began to talk about how much they liked doing this kind of assignment on the computer instead of reading the printed book. When I asked *'PT'* why he didn't mind reading the text again, he said, "I like when the computer (Read:OutLoud) reads it to me."

Season/Year	Student Score Range	District Average RIT	Norm Group Avg	Student %ile Range
W08	197 – **200** - 203	201	194	53 – **62** - 71
F07	181 – **184** - 187	195	190	25 – **31** - 40

MAP-R Results

Before/After Co:Writer Writing Samples

Teachers agreed that while students needed to continue to work on their written responses, Co:Writer helped them to make progress from their original papers. You can see lengthier sentence structure and vocabulary in the before and after student writing samples.

"C's" Before Co:Writer

Marc Brown's grandmother helped Brown by telling him good storys. It helped him get Ideas. When his grandmother saved his pictures. Then his grandmother gave him his pictures to place it in his book that he's making.

"C's" After Co:Writer

His grandmother encouraged him to draw and save his artwork. He saved his artwork because when he is making a book he can just put it in. His grandmother also helped him by telling good stories so he could get ideas. In the text it said that his grandmother told good stories.

"Students liked Co:Writer. As I reviewed their before and after writing samples with teachers, they noted that their students' writing became more verbose."

Conclusion:

Over the fifteen weeks of my research, I concluded:

- Students who are deemed lazy or not paying attention can be empowered by technology to improve their focus and may become less frustrated by their language barriers.
- If ELL/ESOL students can access assistive technology literacy tools and are allotted time to use them, they can improve their confidence and make reading and writing gains.
- Using these tools, students who could not write a single word wrote detailed paragraphs and students who did not want to read a book became engaged readers.
- Teachers who use assistive technologies will motivate students who are eager to demonstrate what they know.

View Jo Belyea-Doerrman's complete research paper at http://www.jobdoer.net/doerrman/TAR.cfm