Action Research

The Effect of Adding Independent Computer Time on the Reading Proficiency of English Language Learners

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Abstract

The purpose of this quantitative research was to examine the effectiveness of adding independent computer time on the reading proficiency of English Language Learners. A class of second grade students participated in four weeks of regular reading instruction including guided reading, buddy reading, teacher-made reading centers, and a listening center. During the following four weeks, the students received the same reading instruction plus twenty minutes two times a week of independent computer time instead of working on the teacher-made centers. A pretest and a posttest were given at the beginning and ending of each instruction period. The gains for each period were compared and the results did not show a significant difference. However, the students did make large gains in their reading levels from the beginning to the end of the entire eight weeks of the research.
**Introduction**

**Statement of the Problem:** Investigate the effectiveness of adding independent computer time on the reading proficiency of English Language Learners.

**Research Questions:**

- Will adding individual practice time on the computer with speech feedback increase English Language Learner’s proficiency in reading?
- Will the students enjoy their time on the computer?
- Will the students ask to use Starfall after the research is over?

**Background and Reasons for the Research:**

The elementary school where I teach has a majority population of Hispanic students. Each year, our school has low scores on the reading portion of the state-wide test called the Criterion-Referenced Competency Test or CRCT. The subgroup that has the lowest scores is the English Language Learners (ELLs) subgroup. These scores have even caused the school to be placed on the “failing schools” list because of not making Adequate Yearly Progress (AYP) in two out of the past three years. Needless to say, students demonstrating proficiency in reading comprehension is one of the school’s goals in the school improvement plan. This is why it was important for me to see how I could help my own ELLs increase their reading proficiency, which would, in turn, increase their reading scores on the CRCT. In addition, it is very straining on both the students and myself during the student’s independent reading time because they are frequently lost
due to their lack of English and very low reading ability. They are constantly seeking my help to read certain words to them or just start misbehaving. While I am with a small guided reading group, the ELLs are usually having such a hard time to get through a book that is on their reading level because they do not understand the language, they have a lack of background knowledge for most books, and their decoding skills are still in progress. I have seen the frustration lead to a low desire to read, which usually ends in misbehaving. Obviously, I cannot be reading with every student at once, and pairing students to read together is not really an option since my whole class is Early Intervention Program (EIP) and reading below grade level. Instead of allowing my students to spend the time they are normally frustrated while trying to work on centers independently, they were able to work on the computer, which provides images of the vocabulary they may not understand, as well as a computerized voice reading text that is on their level. This change in my reading instruction was a possible solution to the low reading scores for the ELLs, in my opinion.

**Literature Review**

The Adequate Yearly Progress (AYP) results are coming out and the teachers and administrators are worried once again. Will this be another year the school’s English Language Learners subgroup will fall short in reading? What else can be done for these students? How can the teachers change their reading instruction to better prepare their students for the state-required test and for a life that is full of reading English? The debate over reading methods has had a long and often circuitous history even for students who speak English as their native language (Thompson, 2000). Faced with mounting demands, mainstream teachers vary considerably in their eagerness to incorporate ELLs
Reading Proficiency

into their classrooms (Youngs and Youngs, 2001). With the growing numbers of ELL’s in America’s schools, many teachers will ask these same questions as to how educators can effectively teach ELLs how to read in their non-native language.

In addition, a major part of our ever-changing world includes technology. The basis of every educator’s goal is to prepare their students for the real world. That leaves the teachers with the responsibility of introducing the students to useful technology, such as computers and the Internet. How can this be done while still incorporating education and sticking to the curriculum?

Teaching Reading to Primary English Language Learners:

In 2006, the Pre-K through 12th grade population of schools in the United States included more than 4.5 million students with limited proficiency in English (Tindall). So, there is a great need for research to uncover the best practices for teaching these students, especially in reading since reading directly affects the rest of the subjects learned in school. There is a large amount of research exploring ways to better teach students how to read. After research over several years of studying how young students in elementary schools best learn how to read, The National Reading Panel (2000) reports that a combination of teaching phonics, word sounds, and giving feedback on oral reading are the most effective ways to teach reading to any student. Gersten and Geva (2003) conducted research on the primary-aged students in two elementary schools over three school years. They followed the Kindergarteners through second grade, giving one group extra intense phonics instruction and the other students received the typical amount of phonics instruction that the two schools provided to their students. They found that
instruction in phonological awareness enhances growth in reading and spelling. On average, the students with intense phonics instruction were either reading on grade level or above grade level, while the other students were mostly reading below or on grade level. Scarborough’s research found that there is a link between oral language comprehension and subsequent reading comprehension for ELLs and suggests that instruction in both listening and reading comprehension strategies is particularly important for ELLs (2001). Another effective way to teach ELLs to understand what they read is to define vocabulary words from the reading. More specifically, ELLs need more than just a definition because they need pictures or someone acting out the words. Scarbrough’s research on hundreds of ELLs showed significant benefits when the students first understood the main vocabulary in a story before trying to read it themselves. The computer program, Starfall, gives students extra practice on all these strategies. It focuses on phonics; phonological awareness offers instruction of oral comprehension and will show pictures of the more difficult words or have characters act out the action words.

The computer-based help I decided to use, Starfall, is a free website that can be accessed online by anyone. I choose this for a few reasons. First, the stories and activities are categorized by reading level, so I could assign each student the level that was appropriate for them. Secondly, I knew it was very popular with previous students because of its kid-friendly navigation, colorful illustrations, and the speech feedback. Thirdly, Starfall offers phonics instruction for the ones on the lower levels. Lastly, I knew the students with internet access at home could easily access and use the website at home on their own for extra practice.
Benefits of Using Technology in the Classroom

There is much educational value to using technology in the classroom. The Office of Educational Research and Improvement for the US Department of Education (2000) conducted a survey about the effects of technology used in a classroom on the students. The researchers found that there are many positive effects on the students’ attitudes and new skills that were acquired. Some of the positive results include students taking an active role in their learning, plus an increased motivation and self esteem (Pan, 2002, Barnett, 2001, 2003, Haugland, 2000). In two studies done to see how students learn from computers, “students who learned from computers showed consistently higher gains on statewide tests” (Mann, Shakeshaft, Becker & Kottkamp, 1999, p. 3). The researchers were able to determine that 11% of the gain was due to the use of technology.

Students who are poor readers because of their lack of understanding and experience with English report that reading is slow, inaccurate, and hard work. To extract meaning from text, they usually find that they have to proceed slowly, re-read passages frequently, struggle to decode unfamiliar words, and interrupt their reading frequently to recover from fatigue and stress (Elkind, 1998). As a result, the quantity of material that they read is small, and since they get much less practice reading, they have less opportunity to improve their reading skills and fluency. To help these ELLs catch up on their reading by making greater improvements, they could be exposed to using computers where there is text displayed and read by the computer. This takes the place of having one-on-one reading with an experienced reader which is not usually available in a classroom. Until they are more capable of reading fluently by themselves, it may
help to have computer-aided with speech feedback to offer the correct way of reading fluently on their level (Haugland, 200).

On the other hand, there are some downsides from reading on a computer screen as opposed to reading on paper. Most studies comparing paper and computer screen readability show that screens are less readable than paper. The factors that affect this are the formatting of the screen, the contrast and color of the characters and background, and dynamic aspects of the screen (Mills, 1998, Askwall, 1997).

After reading several studies conducted to uncover the pros and cons of using computers in the classrooms, there appear to be more pros. The increased motivation and the students taking an active role in their own education seemed to be worth it despite the possible difficulty of children reading from computer screens. I wanted to find out for myself if this research would increase my students’ desire to use the computers in our classroom.

**Methodology**

In order to investigate the effectiveness of adding independent computer times on the reading proficiency of English Language Learners the subjects involved were my second grade class which is 100% EIP self-contained. I have twelve ELLs and 5 non-ELLs in my class. The ELLs are all Hispanic and the rest of the class is African American. I gave the STAR reading assessment as a pretest to determine each student’s reading level, followed by four weeks of regular reading instruction. This includes guided reading, whole group instruction, buddy reading, phonics instruction, reading aloud and individual reading time. Then, I gave STAR reading assessment as a posttest to see if there was any improvement in their reading levels. Next, I continued regular
reading instruction plus giving each student 20 minutes two times a week for four weeks practicing their reading skills on Starfall. On this computer program, they practiced phonics, phonemic awareness, reading aloud with computer, and reading comprehension. Finally, I gave the STAR reading assessment again as the second posttest.

STAR is a reading program that was purchased by my school, which provides computer-based reading tests to determine each student’s grade equivalency as well as other reading data such as comprehension skills and the range of their independent reading level. In addition to the overall reading tests, included in the package of this program are individual reading comprehension tests for most of the books in my school library. Once a student reads a book that is in the STAR computer program, they take a test and earn points depending on their score. This is also good motivation for the students as they accumulate more reading points throughout the year.

**Timeline:** (eight weeks total: 4 weeks regular instruction and 4 weeks with Starfall + regular instruction)

- Week 1: Day 1: Pretest (#1)
- Week 1: Day 2 – Week 4: Day 19: Regular reading instruction
- Week 4: Day 20: Posttest (#2 which also is Pretest #2)
- Week 5: Day 21 – Week 8: Day 39: Regular reading instruction with Computer program practice (Starfall)
- Week 8: Day 40: Posttest (#3)
Participants

I used the 12 English Language Learners in my second grade class. I allowed my non-ELLs to participate in using Starfall, but I did not use their data.

Nature of Data

I used the determined reading levels from the STAR reading assessment. This is quantitative research. The grade equivalency for STAR in the primary grades is as follows:

- Kindergarten: 0.0 – 0.9
- First Grade: 1.0 -1.9
- Second Grade: 2.0 -2.9

Instruments

I used STAR reading assessments for the pretest #1, posttest #2, and posttest #3. (These tests are given on the computer from the computer program)

Also, I used their Developmental Reading Assessment (DRA) scores done in August to determine the level they will practice on Starfall to make sure each student spends his or her computer time on his or her independent reading level:

<table>
<thead>
<tr>
<th>DRA Level</th>
<th>Corresponding Starfall Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4 (Kindergarten)</td>
<td>#1 ABC’s</td>
</tr>
<tr>
<td>6-10 (early 1st gr.)</td>
<td>#2 Learn to Read</td>
</tr>
<tr>
<td>12-18 (late 1st gr.)</td>
<td>#3 It’s Fun to Read</td>
</tr>
<tr>
<td>20 + (2nd gr.)</td>
<td>#4 I’m Reading</td>
</tr>
</tbody>
</table>
Method of Analysis

I used statistics to analyze my data. I used Posttest 1 as Pretest 2 to decrease testing time, which takes away from instructional time. I compared the pretest and posttest gains without the computer with the pretest and posttest gains with the computer for each child. Then, I checked the significance by using a t-test for the P-value.

Results

Figure 1

The mean gain from Pretest 1 to Posttest 1 was .33. The mean gain from Pretest 2 to Posttest 2 was .4. Refer to Figure 1 to see that this data shows there was a greater increase in gains using the computer than not incorporating the computer by only .07.
Figure 2

t-Test: Paired Two Sample for Means

<table>
<thead>
<tr>
<th></th>
<th>0.4</th>
<th>0.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.327272727</td>
<td>0.381818182</td>
</tr>
<tr>
<td>Variance</td>
<td>0.060181818</td>
<td>0.065636364</td>
</tr>
<tr>
<td>Observations</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>0.501916972</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Df</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>0.722315119</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.243324386</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.812461102</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.486648773</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.228138842</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2 shows the descriptive statistics. When I ran a t-test, the p-value was 0.48. This means that 48% of the time adding independent computer time doesn’t affect the student’s reading levels, but 52% of the time it does. This data shows that there was not a significant change from adding in a computer practice into the classroom.

Conclusions

Even though there was no significant change when adding the computer practice into the typical reading instruction, the data does however show a healthy increase in reading scores with or without the extra computer practice. From the beginning to the end of the entire study, there was an average gain by the ELL students of 0.73. So, on average the students increased their reading level by seven tenths of a school year in only eight weeks. This is the kind of reading improvement to help get these ELL students on track with the second grade reading level. Figure 3 shows each student’s total gains in their reading level from the total eight week time period (Pretest 1 to Posttest 2).
Another conclusion is the possibility of not just adding Starfall as the assigned reading practice on the computer. Perhaps other websites could be incorporated during each student’s time on the computer.

**Limitations**

Limitations on this study include a small number of students, which were only twelve ELL students. Also, there was only limited amount of time to perform this study. In addition, the classroom schedule could only allow a small amount of time on the computer. Lastly, my students’ lack of experience on computers was a limitation. It took them a while to get used to navigating a computer.

**Discussion**

Of course this study is not meant to imply the substitution of actual teachers with the use of computers. The technology portion was just an addition to the typical reading instruction. The computer practice was in place of the time given to the students to work on teacher-made centers independently or with a partner. This center time was chosen to
be replaced due to the limitations of the centers, such as a lack of direct teacher guidance, and the student’s low independent reading levels.

Another result from the added computer time was the great increase in the student’s desire to spend time on the computer for educational purposes. It was noted by the teacher that the students began to beg for more computer time, especially to use Starfall and other similar reading websites. Also, they are less intimidated to work independently on the computers and the Internet.

**Implications for Future**

I will continue to allow the students to choose educational websites during either center time or free time, especially when I am working with a small reading group. As for a future research study, I would add other reading websites that I have found and feel are effective. Also, I would increase the number of weeks to perform the study and possibly increase the number of students to the entire grade. Lastly, I would like to conduct a similar study investigating the use of increased buddy reading time instead of adding time on the computer. In that study I would pair up my students with either second grade students who are reading on grade level or third grade students in order to provide a good model of reading.
**References**


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