# Teacher Views and Perceptions of K-12 Reading Software Implementation

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## Background

Reading is a skill that is required for almost every basic function of everyday life, from knowing what a restaurant's lunch specials are to understanding how and when to take life-saving medication. As Keyes, Cartledge, Gibson Jr., and Robinson-Ervin (2016) write, "Reading is a critical skill that, if not mastered, could have detrimental effects on a person's life" (p. 141). Arcia (2006) notes that there is an association between student's poor reading comprehension ability and higher rates of school suspension as well as drop-outs. Looking at the world at large, it is hard to argue against attempts in improving student reading comprehension rates.

## Need

According to the National Center for Education Statistics (2019), in 2017 68% of fourth grade students in the United States tested at or above the "basic" level of proficiency. This means that one-third of United States fourth grade students were performing at less than the basic level of proficiency, or, in other words, were struggling with their reading comprehension. The same report shows that in 2017, eighth grade students tested at or above the basic level was 76%, and for twelfth grade students, in 2015, the latest data the NCES recorded, 72% tested at or above the basic level. For these grades, while performing better than the fourth graders, still about one out of four students qualifies as a struggling reader.

While the literature shows that there is a correlation between a number of computerized reading software programs and an increase in student assessment scores, one area that the literature suggests may play a role in improving scores is the teacher's views and perceptions of the program being used and of computerized reading software in general.

## Research Questions

This study seeks to answer three questions:

1. What are K-12 teacher perceptions of reading assistance software currently in use?
2. What functionalities do K-12 teachers believe help their students the most?
3. What future functionalities would K-12 teachers like to see implemented?

**Literature Review**

Herold (2016) writes that when developing curriculum, it has been put together with what curriculum writers assume is an average child in mind. The curriculum then needs to be flexed to fit the actual students that are using it. Using digital tools, however, such as reading software, can assist in anticipating the needs of the students, especially those who need greater assistance in reading. Reading software can be customized to each students reading ability, regardless of what their reading level is compared to their grade level. These software allow teachers to target specific reading skills such as sight words, phonemic awareness, or even comprehension. Herold writes that with a software such as Houghton Mifflin Harcourt's *READ 180*,

> As the students use the software, it analyzes how they read and perform on subsequent vocabulary quizzes and exercises. From there, READ 180 seeks to identify which words each student understands and can read and spell, as well as how quickly the student can do each of those functions" (p. 2).

The different types of technology currently available also allow students to show what they have learned in multiple ways. Herold points out that iMovie, Google Docs, and even Skype can help students create new outlets of producing content that can showcase what they have learned.

Wood, Grant, Gottardo, Savage, and Evans (2017) state that "Mounting research evidence conducted in formal school learning environments and informal home and child-care

contexts indicates that children's cognitive and social lives can benefit from the use of effective instructional software" (p. 207). One type of instructional software that is currently in use is for reading comprehension. Wood, et al, write that one of the largest areas using reading comprehension software is in the lower grades where students are just beginning to learn the basics of reading words and of sentence construction. Phonological awareness, the relationship between the letters and the sounds they represent, is another key part of early reading.

A point of interest is when Wood et al. (2017) write that "Formal evaluation is not required and may never be conducted on software prior to its release, leaving parents and educators to determine whether the stated goals or claims are substantiated or how these claims are realized through the software" (p. 208). In an era where nutritional values of cheeseburgers are required to be displayed in fast food restaurants, it can be surprising that one of the essential functions of our society, educating our children, may utilize technologies that are not given the scrutiny that a bag of pretzels in a school cafeteria vending machine receives.

Wood et al. (2017) looked at 14 commercially available software that focus on literacy and reading skills for Kindergarten and first grade students, of which three were fully online and 11 were offline programs. Nine overarching reading skills and 45 sub-skills were examined. Their research showed that all 14 software packages were able to improve student's baseline literacy scores across the nine overarching skills and the 45 sub-skills. The three online programs, however, showed greater literacy improvements than any of the offline software. Wood et al. (2017) write, in regards to the online programs, "They demonstrate a more complete and balanced approach to literacy by training a fuller taxonomic structure of reading development from beginner to advanced level" (p. 214). Wood et al. (2017) go on to write that even with the best of the software, parent and instructor support in necessary for student success,

as well as "Acknowledgement of the need for experienced supportive instruction is explicitly addressed in the design of some programs but not in others. For example, all of the online programs offer parent and/or teacher portals" (p. 214).

Proudfoot (2016) looked at the effects of reading software for middle school students not only on their reading achievement, but how it effects their math achievement as well. Struggling readers often have issues with word problems not because of the mathematics involved, but because they have difficulty understanding what is being asked of them and how to sort through the information that is given in text. Proudfoot (2016) writes that "Students who are competent readers, as measured by their performance on reading tests, are more likely to perform well in other subjects, such as math and science" (p. 39).

Thirty nine students in a Florida school's 4th and 5th grades acted as the experimental group in Proudfoot's study. Each student in the 4th and 5th grades received the standard reading comprehension curriculum while these 39 students also received a 30 minute block, five days a week, for five weeks, in a computer lab where they were given their own computer to work on. The regular education teacher was also present for these blocks. The results of this study showed that there was no statistical significance in the mathematics scores between students who took part in the experimental group versus the control group, nor was there a statistical significance in pre- and post- intervention mathematics scores for the experimental group. Proudfoot (2017) did show, however, significant increases in reading skills for the experimental group. When it came to determining the main idea of a piece of text, students in the experimental group showed a gain of 58.3% in mastery over their pre-intervention scores (Proudfoot, 2017).

Keyes, Cartledge, Gibson Jr., and Robinson-Ervin (2016) note that "educators must use software that provides for evidence-based, effective instruction to produce desired results in

reading" (p. 143). Computer assisted instruction and software is often in great need, especially in urban districts, where economically disadvantaged students, on average, read below grade level at a higher rate than their non-disadvantaged classmates. Reading software can also be a tremendous asset to special needs populations. Both economically disadvantaged and special needs students who receive computer assisted instruction allow instructors to more specifically tailor what the student learns towards their needs, while at the same time allowing for differentiated instruction to take place without the need for extra time on the part of the students or the instructors (Keyes, Cartledge, Gibson Jr., & Robinson-Ervin, 2016).

In their study, Keyes, Cartledge, Gibson Jr., and Robinson-Ervin (2016) looked at six students, seven to eight years old, in a Midwestern urban environment who were reading below grade level. Each of the students utilized a computer-based reading program lasting form six to 10 weeks. Pre-intervention assessments were administered in the beginning and post-intervention assessments were administered at the completion of the program. All six students involved showed a significant increase in assessment scores at the conclusion of the study. Keyes, Cartledge, Gibson Jr. and Robinson-Ervin (2016) also asked the student's instructors for their opinions on their student's progress. All instructors involved noted that the software had engaged the students, that the students enjoyed their time using the software, and also noted that those who worked harder showed a larger increase in their post-intervention assessments. They also stated that all the students showed an increased level of confidence in their reading ability at the conclusion (Keyes, Cartledge, Gibson Jr., & Robinson-Ervin, 2016).

Gibson Jr., Cartledge, Keyes, and Yawn (2014) looked at eight students, age's six to eight, across two separate schools. Each of these students had rated as "At Risk" according to a Dynamic Indicator of Basic Early Literacy Skills (DIBELS) assessment. The students were

introduced to the Read Naturally Software Edition over two phases. All the students increased their scores in both areas being assessed: Oral Reading Fluency (ORF) and Word Retell Fluency (WRF).

Gibson Jr. et al.'s findings align with Dickerson-Massey Johnson's (2016) study, which also looked at pre- and post-intervention DIBELS scores. Dickerson-Massey Johnson (2016) looked at the Renaissance STAR reading software program and its' relationship to student's scores on the Alabama Math and Reading Test (AMRT). Indeed, "Results revealed a significant positive and predictive relationship between the two assessments" (Dickerson-Massey Johnson, 2016, p. ii).

Young (2016) studied the effects of another reading software, Classworks, on fourth grade students. In her study, an experimental group received the Classworks reading intervention while a control group received more traditional face-to-face instruction. After pre- and post-intervention assessment, Young (2016) concluded that "The finding of the study suggested that using technology through the Classworks software program did show a significant difference when used as compared to students without the treatment of Classworks" (p. 86).

Takahashi (2015) looked at struggling readers from another technology perspective: the use of Text-To-Speech (TTS) software. Takahashi (2015) found that the use of TTS software helped special needs and struggling reader students to increase their reading comprehension skills. Also of note was the fact that the teacher attitudes and experience with TTS software also played a role in the outcomes, with teachers who had a better attitude towards the software and more experience (which were often the same) were better able to utilize the software to assist their students.

Reed (2010) found that "out of 45 countries worldwide, at least 60% of those countries have more than one-third of their fourth graders performing below the international mean in reading" (p. 2). Reed then studied whether or not computer software games that are focused on reading had an effect on student's DIBELS scores. When it comes to using gaming technology in order to assist in reading, Reed (2010) cites Prensky (206) and Gee (2008) as finding that these types of software

> have noted many benefits such as: (a) increased student motivation; (b) differentiated instruction; (c) rising test scores; (d) increased critical thinking, pattern identification and problem solving skills; (e) semantic and syntactic clue use; and (f) negotiation techniques (Reed, p. 29-30).

Reed (2010), however, only used one software, Reading Blaster, in her study. The end result was that there was not a statistically significant change in reading scores for students who used this software.

Myers (2016) also found that there was a statistically insignificant correlation between the Academy of Reading software and student scores on the Tennessee Comprehensive Assessment Program, which assessed students in the fourth, fifth, and sixth grades. Myers (2016) did note, however, that the teacher attitudes did play an important part of the Academy of Reading intervention.

**Method**

This phenomenological study looks to better understand the views and perceptions of teachers, at varying levels of experience, who use reading assistance software in their classes. This study utilizes purposeful sampling based on the selection of 12 teachers located at three separate K-12 schools located in northern New Jersey. Four of the teachers have less than one

year experience of using reading assistance software in their classes, four have been using it for between two and four years, and four have used it for five or more years.

This study is phenomenological in nature in that it utilizes interviews and site visits to try to fully understand the feelings of the teachers involved in this study. Creswell (2013) suggests a range of five to 25 participants for a qualitative study of this type. The population of this study is made up of K-12 teachers in northern New Jersey who utilize reading assistance software in their classrooms, and this study focuses on a sample of four teachers in each level of reading assistance software experience: 1) less than one year, 2) two to four years, and 3) five or more years. The reason for this is to gather data from teachers who have had different levels of experience and involvement with implementing reading assistance software in their classrooms.

**Procedures**

The superintendents of five northern New Jersey school districts, who have implemented reading assistance software into their classrooms, will be contacted for permission to participate in this study. For selecting the sample, Reading coordinators and Technology coordinators in those northern New Jersey school districts will be contacted and asked for up to five names of teachers in their district who may fit into the criteria of using reading assistance software in their classrooms at one of the previously mentioned experience levels. One potential issue that may arise is that the teachers themselves do not wish to take part in the study. Because of that possibility, up to 25 teachers will have been recommended, of which only 12 need to agree to participate.

Once the sample has been identified, they will receive an emailed list of at least seven open-ended questions (Appendix A). This instrument will be designed by myself, though patterned after the instrument developed by Barnard (2004). Permission from Barnard will be

obtained for using her instrument as the basis for this newly developed one. The instrument questions will be given to professional educators not involved in this study to check for clarity and validity. During the in-class observation, detailed notes will be taken in regards to how each teacher interacts with the students using the reading assistance software as well as with the software itself.

The timeline for this study is for a duration of five months. The first month is dedicated to obtaining the appropriate permissions, validating the instrument, and selecting the sample. The second month is the distribution and return of the interview questions. Interviews will be sent the first day of the month, giving the respondents ample time to give written answers that fully take into account each question. Also during the second month the observations will be scheduled. The observations themselves will take place during the third month. The fourth month will be spent compiling and analyzing the data that has been obtained. The fifth month is reserved for writing up the study for publication.

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## Appendix A

Interview questions for teachers using reading assistance software in their classrooms

1. What were your thoughts on the use of reading assistance software in the classroom before you began to use it? Did you think reading assistance software would be an effective intervention?
2. Since you have been using reading assistance software in your classroom, has your opinion changed or has it been justified? Do you view it as an effective intervention?
3. What areas of strength, if any, do you see in the reading intervention software? What areas of weakness, if any, do you see in the reading intervention software?
4. How do you view your students' reaction to the reading assistance software? Has it been positive, negative, or a mixture of both?
5. Is there a particular type of student that you see benefitting from reading assistance software? If so, in what ways? Is there a particular type of student that you see not benefitting from reading assistance software? If so, in what ways?
6. What functionalities currently available do you believe best help your students, if any? IN what way do you see them helping? Are there any functionalities that you see as not helping your students? If so, why?
7. What future functionalities would you like to see implemented in reading assistance software? How do you view these functionalities as helping your students?