

The Effectiveness of Reading Rocks: A Literacy Intervention Approach

Rachel Meighan

Brock University

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Introduction

The ability to read is a fundamental skill that is needed for full participation in our society. The demands for high levels of literacy are rapidly increasing in both school and the workplace. Those who have low levels of literacy are at a continuous disadvantage in society because of the fact that reading is embedded in virtually every aspect of our daily lives (Torgesen, 2002; NELP, 2008). As a result of literacy becoming so ingrained in our culture, we often forget that learning to read is a complex task that requires the use of various cognitive abilities (Norton & Wolf, 2012). Given the complexity of reading, there are children who do not achieve this fundamental skill despite the fact that they are expected to have mastered it by the age of seven (Norton & Wolf, 2012). In which case, the National Center for Learning Disabilities (Cortiella & Horowitz, 2014) found that 42% of school-age children receiving special education services have a learning disability. Within that, more than 80% of students are affected by a reading disability, which is the most common form of learning disabilities (Costa, Edwards, & Hooper, 2016).

Those who struggle with reading are said to have difficulties with word recognition, fluency, and/or comprehension. Such difficulties arise when there is a deficit in their phonological processing of language, which in turn results in poor spelling and decoding abilities (Costa, Edwards, & Hooper, 2016). Reading difficulties are proven to be long-lasting and can be detrimental to other areas of one's life, if not substantially remediated (Torgesen, 2002). The National Early Literacy Panel (2008) recognized that children struggling to read in kindergarten or earlier, are more likely to experience these same difficulties in the future. Identifying these indicators and intervening early is the best way to prevent the occurrence of significant reading problems. The National Early Literacy Panel's (2008) findings highlight the fact that well

developed literacy skills are found very early in a child's education and when one falls behind in the development of such skills, the consequences are likely to be lifelong.

Reading Rocks is an empirically based intervention program that aims to support children who are at-risk, experiencing reading difficulties, or have been diagnosed with a reading or learning disability. This program espouses a preventative approach whereby children are not required to have a formal diagnosis of a reading or learning disability. This is important because early intervention is most effective and can prevent years of struggle and self-doubt (Cortiella & Horowitz, 2014). Reading Rocks focuses on explicitly teaching the three foundational literacy skills of phonological awareness, sight word vocabulary, and reading fluency. Further, Reading Rocks is unique because of the fact that it not only improves reading development but it also focuses on increasing the children's motivation and self-efficacy through a supportive and stimulating environment. This report will examine the effectiveness of the program by determining whether the participants have significantly improved in the literacy skills of phonics, sight words, and fluency. If children participating in this program show statistically significant results and display an increase in motivation and interest, then Reading Rocks can be considered a reliable and effective program in preventing reading difficulties for children who are at-risk.

Literature Review

Early Intervention

Previous research has consistently shown that children who are struggling to read will improve if given early, explicit, and direct instruction (Nugent, Gannon, Mullan & O'Rourke, 2012). Early intervention is crucial for those struggling with reading because of the fact that waiting until mid-elementary school to identify them will have created far too big of a gap in

their reading development (Torgesen, 2002). Torgesen (2002) suggests that delayed development of reading skills affects “vocabulary growth, alters children’s attitudes and motivation to read, and leads to missed opportunities to develop comprehensive strategies” (pg. 8). Such consequences are a part of a notion called the “Matthew Effect”, whereby children who are good at reading continue to get better and children who are not, will continue to get worse. In other words, proficient readers experience reading success early and in turn, it will lead to greater text exposure and more reading opportunities. Comparatively, struggling readers experience early reading failure which will result in less text exposure and fewer opportunities to engage with literacy. Furthermore, their motivational levels and interest in reading will decrease and unfortunately, they will fall further and further behind their peers (McNamara, Scissons, & Gutknecht, 2011). The Matthew Effect is exhibited through the fact that children who are poor readers at the end of first grade will almost never acquire the average-level skills needed by the end of elementary school (Torgesen, 2002).

Self-efficacy and confidence levels are also adversely affected by reading difficulties. Wherein, vulnerable readers will often have issues with motivation and as a result, it may lead to more internalized disorders such as anxiety and depression (Scruton & McNamara, 2014). This can also be remediated through early intervention that employs certain tactics to engage children in their own learning. This active engagement will allow children to recognize their own progress and achievement and as a result, it will promote a sense of agency (Kerr, Scruton & McNamara, 2015). Increasing motivation will thus increase the child’s desire to continue with reading and change their negative view of literacy to a positive one. This is also supported by the National Educational Psychological Service in which they recognize the importance of encouraging students to make positive declarations about their own literacy achievement. As

such, their positive attitudes towards reading and literacy increase as they become more successful and confident in their reading abilities (Nugent et al., 2012).

Reading Rocks Program

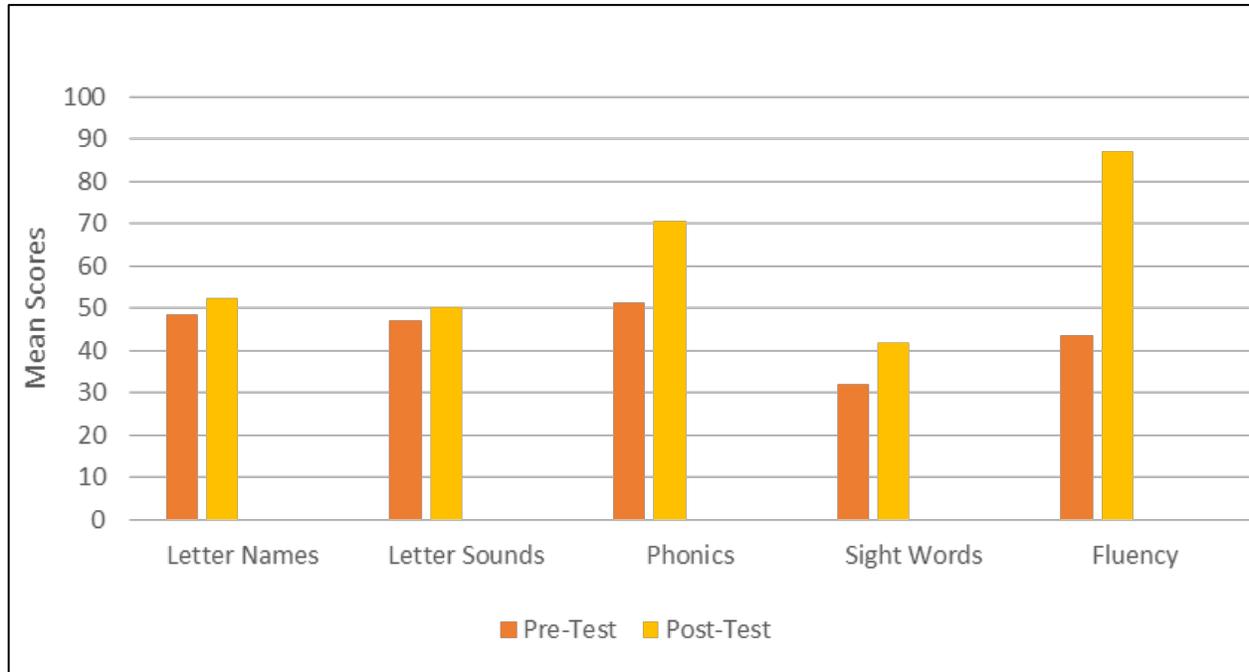
Reading Rocks is a program offered by the Learning Disabilities Association of Niagara Region (LDANR) in various cities across the Niagara Region. It is aimed towards children and youth who are between the ages of six to sixteen and have demonstrated difficulties with reading. It is an eight week program that takes place twice a week, for one hour sessions. These sessions are then broken down into four, fifteen minute time intervals that are focused on the three foundational literacy skills; phonics, fluency, and sight word vocabulary, with the last time block used for reading appreciation. Trained tutors work one-on-one with a child so as to create a customized program plan and ample opportunity for individual feedback. They engage children in their own learning through the use of tactics such as, task understanding, goal setting, graphing, and monitoring.

When the children arrive, they are paired up with their tutors and proceed to their designated room. They will then decide how to divide up their four, 15 minute time blocks with the corresponding literacy-based instructional component (i.e. phonics, sight words, and fluency). For example, they may choose to begin with a 15 minute block of sight words, followed by phonics, fluency, and ending with reading appreciation. During these time intervals, tutors are using explicit, and modeled instruction to teach the specific literacy skills and then ending the allocated session with a game or a fun activity so as to promote a positive association with reading. Because of the fact that sessions are one-on-one, tutors are able to monitor and customize their activities to the areas where the children need it most.

Reading Rocks also promotes positivity through the spectrum of motivation. Several tactics are used in order to increase children's motivation and reading achievement. In particular, children and their tutors will create an instructional workstation that is designed and tailored to each child's needs and interests. Along with that, goal setting is an essential component of Reading Rocks in which goals are set collaboratively between both the instructors and children. These goals are to be completed within a set time period and because of this, children are more eager to engage with and complete the tasks. They are then graphed and visibly displayed on their personalized board. Children view their workstation as an accomplishment as it demonstrates all of the achievements they have made throughout the program.

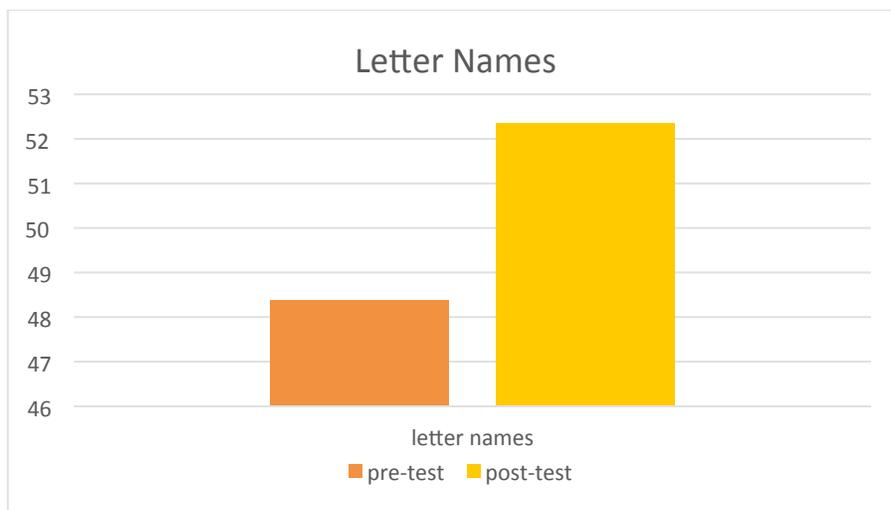
Results

Results were collected from 28 Reading Rocks participants in various locations across the Niagara region. Through pre- and post-test assessments, the five literacy skills of letter names, letter sounds, phonics, sight words, and fluency were measured. At the beginning of the program, children and their tutors were asked to complete a pre-test, before any intervention began. Subsequently, the post-test was collected on the last week of the program after children had completed a total of sixteen intervention sessions. The data from these assessments was then input into SPSS and used to compute five paired-samples t-test corresponding to each literacy skill. A graph displaying the results from the pre- and post-test mean scores is shown below.



Pre- and Post-test Mean Scores for Emergent Literacy Skills

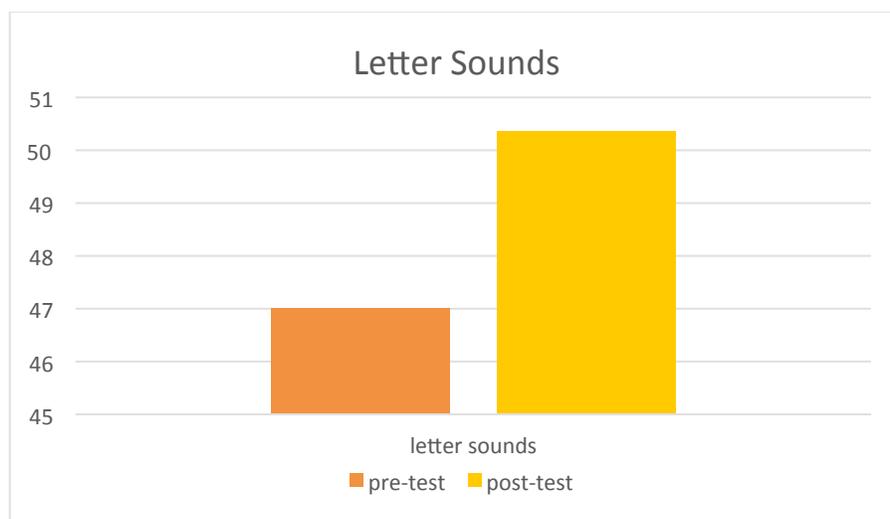
Letter Names



The informal test for letter names is used to determine the children's ability to name all of the letters in the English alphabet in both upper- and lowercase forms. Children were shown the letters on a piece of paper and were asked to name it. If they properly identified the letter, it was

marked correct. The total maximum score for letter names was 53. Children's alphabet knowledge is one of the best predictors of later word reading ability and as such, difficulties in this area are an indicator of future problems in reading (Piasta & Wagner, 2010). Due to the importance of letter recognition, it is taught very early on in a child's life and an alphabetic component is emphasized in most preschools. Additionally, Piasta & Wagner (2010) recognized that children use their knowledge of letter names when learning letter sounds, meaning that their letter-name and letter-sound correspondences are facilitated through prior letter knowledge. With that said, the pre-test means for this measurement was 48.37 (SD= 5.98) and the post-test mean of 52.35 (SD= 4.97). This increase was found to be significant using a paired samples t-test [$t(28) = -5.34, p < .001$], indicating that the children's ability to identify letter names had improved.

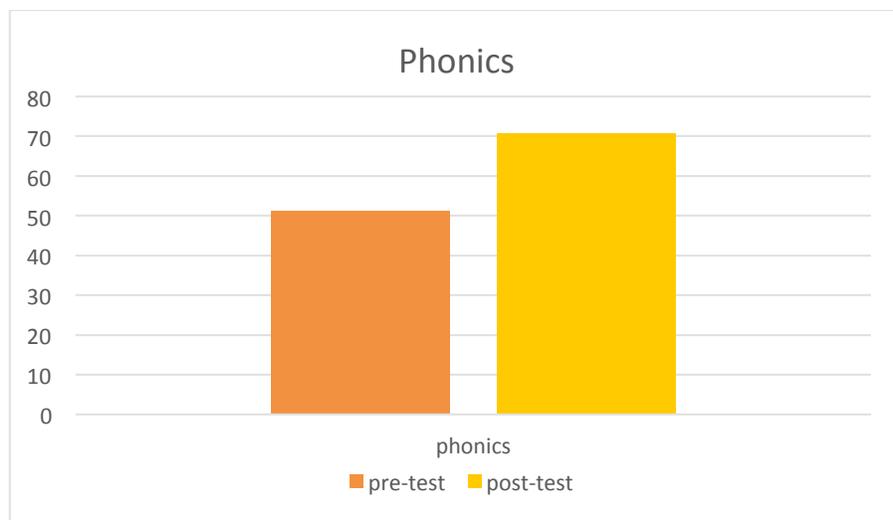
Letter Sounds



The informal test for letter sounds was used to determine the children's ability to identify the sounds associated with the letters of the English alphabet, both in their upper- and lowercase forms. Children were visually shown the letter printed on a piece of paper and were asked to

pronounce it. If they provided the correct sound that the letter made, they were given a point in which the maximum amount of points was 53. Similarly to letter names, understanding letter sounds are critical to a child's reading development. Treiman et al. (1998) note that, "knowledge of letter sounds helps children to decode printed words and to construct the spellings of words in their spoken vocabularies" (pg. 1524). The pre-test mean for this measurement was 17.46 (SD = 6.55) and a post-test mean of 20.57 (SD = 6.26). A paired samples t-test concluded that the results were significant [$t(28) = -5.99, p < .001$]. Thus recognizing that children's ability to correspond their letters to the letter sound improved after completing Reading Rocks.

Phonics



An informal phonics assessment was used to assess the child's phonemic awareness. This was conducted through 14 subcategories. Children were asked to read as many items on the list as they could within each category. The phonics assessment had a total score of 149. Phonics instruction emphasizes the acquisition of letter-sound correspondences and their use in reading and spelling. It helps readers understand how letters are linked to sounds (phonemes) to form letter-sound relations and spelling patterns which in turn, helps them learn how to apply this

knowledge to their reading (National Reading Panel report, 2000). The National Reading Panel (2000) suggests that because of this, phonics instruction is the most effective in remediating reading difficulties. The pre-test mean was 51.18 (SD= 37.62) and the post-test mean was 70.76 (SD= 39.87). The paired samples t-test showed that it was statistically significantly [$t(28) = -6.95, p < .001$]. This demonstrates the fact that children improved on their sound-letter associations and phonemic awareness.

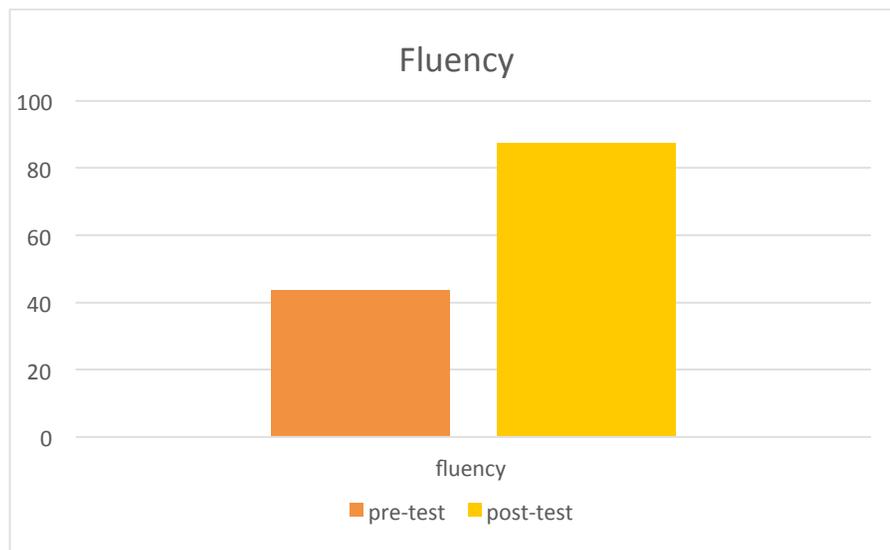
Sight Words



The Dolch Sight Word List was used to determine the children's ability to identify and accurately pronounce the most common sight words according to their level of reading. The assessment included the Pre-Primer, Primer, First Grade, Second Grade, Third Grade, Fourth Grade, and Fry Sight Word Assessments. Tutors began the test with the level of assessment that the child was reportedly at and continued through the levels if the tutor thought it was doable. For the entire Dolch Sight Word List, there was a maximum of 300 points. Sight words are defined as high-frequency words that children are encouraged to memorize so that they are able to read with fluency and comprehension (NRP, 2000). The pre- and post-test means for this

assessment were 31.89 (SD=20.98) and 41.78 (SD= 22.42), respectively. The paired samples t-test showed that children's sight word knowledge significantly increased [$t(28) = -9.05, p < .001$]. Therefore, this means that children's retention of words has been enhanced and they were ultimately better able to instantly recognize words by sight and read them automatically

Fluency



Reading fluency was measured through a standard calculation. A reading passage that was appropriately selected by the tutor prior to the first session was used to conduct this assessment. As the child orally read the passage, the tutor recorded their errors and self-corrections while using a stopwatch to time them. Fluency is regarded as the ability to read text accurately, quickly, and with expression (NELP, 2008). The pre-test mean for fluency was 43.55 (SD= 27.87) and the post-test mean was 87.27 (SD= 40.21). Therefore, through a paired samples t-test [$t(28) = -8.68, p < .001$], children showed a highly significant improvement in their ability to read the passage with efficiency and accuracy.

Conclusion and Discussion

Previous research indicates that children who are at-risk or are experiencing reading difficulties will continuously fall further behind their peers and almost never catch up to their average reading level (Torgesen, 2002; McNamara, Scissons, & Gutknecht, 2011). This was exemplified through The National Early Literacy Panel (2008) in which they recognized that children struggling to read in kindergarten or earlier, were more likely to experience these same difficulties in the future. However, the National Educational Psychological Service (NEPS) recommends that children at-risk for reading difficulties can be remediated through intensive, systematic, and explicit instruction (Nugent, Gannon, Mullan & O'Rourke, 2012).

The statistical analysis of five literacy measures revealed that children had significantly improved in all of the five areas; letter names, letter sounds, phonics, sight words, and fluency. Each post-test mean indicated a significant increase in their abilities as compared to their pre-test means. Hence, it can be concluded that Reading Rocks is an effective reading intervention for children and youth between the ages of six to sixteen who are experiencing reading difficulties. This provides reliable and statistically significant evidence that a reading intervention program, such as Reading Rocks, can improve the literacy skills of at-risk children through explicit and individualized instruction. Furthermore, Torgensen (2002) recognizes that research in this field is necessary for the implementation of certain reading strategies in schools. Because of the fact that a considerable amount of children and youth fall behind in their reading development, it is especially crucial to be prepared with resources that can help struggling readers become successful. In other words, we need reading intervention research because it will better allow us to identify the warning signs that children exhibit when they are falling behind in reading.

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