An Investigation of Two Approaches to Fluency Instruction in the General Education Classroom: Repeated Reading Versus Varied Practice Reading
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Executive Summary

During the 2018 spring semester, the Iowa Reading Research Center (IRRC) conducted a study of fluency instruction in fourth-grade classes at 21 elementary schools across Iowa. Students in the participating classes were randomly assigned to one of two conditions:

- **Repeated Reading:** Students read one passage three times in succession.
- **Varied Practice Reading:** Students read three different passages one time each. The passages used similar words.

Students read with a partner, alternating turns. The fluency practice took place three to four times each week for a total of 30 sessions in about 12 weeks.

Based on students’ Formative Assessment System for Teachers (FAST) CBMreading scores, students in the Varied Practice condition statistically significantly outperformed the students in the Repeated Reading condition. Students in both groups improved their fluency at a rate near the 90th percentile:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Amount of Increase in Reading Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeated Reading</td>
<td>18.90 Words Read Correctly Per Minute</td>
</tr>
<tr>
<td>Varied Practice Reading</td>
<td>20.91 Words Read Correctly Per Minute</td>
</tr>
</tbody>
</table>

The Varied Practice group achieved slightly more than an extra week’s worth of improvement over the students in Repeated Reading who spent the same amount of time in fluency practice.
Study Background

Repeated Reading is the most common approach to improving reading fluency and has shown strong effects on improving students’ reading abilities (Lee & Yoon, 2017; Morgan, Sideridis, & Hua, 2012). This approach involves students reading an assigned passage three times in succession and focuses only on increasing the words read correctly per minute (rate and accuracy). However, some forms of implementing this strategy can condition students to read in ways that are not authentic to how skilled readers approach texts. Reading and language arts teachers have been directly observed extending the practice of Repeated Reading to reading books in the classroom and at home by directing the students to read each page three times. Not only does the application to book reading lack an evidentiary basis, but there have been concerns raised about whether the gains students make in Repeated Reading generalize or transfer to new passages (Lee & Yoon, 2017).

The Iowa Reading Research Center (IRRC) conducted the Effective Fluency Instruction for Fourth Graders study described here to investigate an alternative approach for improving students’ fluency. The study involved randomly assigning fourth-grade students to either the traditional Repeated Reading instructional activity or to a new fluency activity designed by the IRRC called Varied Practice Reading. With Varied Practice, students read three different passages, one time each. The first passage in the set was identical to the passage that the students in Repeated Reading were assigned to read three times. The other two passages in the Varied Practice set were specially written to include 85% of the unique words that appeared in the first passage. The similarity in words between the passages is referred to as “word overlap,” and previous research found that practice with high word overlap passage sets produced the most positive effects on students’ reading rate (Rashotte & Torgesen, 1985).

The rationale for using Varied Practice is that students will have the chance to practice many of the words in a passage several times (due to the overlap), but they will see those words in a different order and used in different contexts across the second and third passages in the set. Varying practice contexts may require students to focus on the structure of the targeted task (e.g., fluent reading) rather than superficial aspects of the practice material (Kulasegaram et al., 2015). This should improve students’ ability to transfer their fluent reading to other new texts.

All fourth-grade students who participated in the study spent the same amount of time on the fluency practice, about 20 minutes per session, and they practiced 3 to 4 times each week. The sessions started after the winter Formative Assessment System for Teachers (FAST) screening and ended with the spring FAST screening. A total of 30 sessions were possible during the months of February through April, but students completed an average 26 sessions (range: 1-30 sessions). Passages ranged in length from 110 to 647 words, but most were approximately 300 words. Some were quite simple, written at-or-near a second-grade level (400-500 Lexile), and a few were complex, with the most difficult passage estimated to be on an eleventh-grade reading level (1100-1200 Lexile).
Regardless of whether they were completing Repeated Reading or Varied Practice Reading, students worked with a partner to complete the activity. They took turns reading until each partner had read three times (either one passage repeatedly or three different passages). When not reading, students helped their partners by timing how many minutes and seconds it took to complete the passage and recording any errors their partners made while reading. After finishing a passage reading, the listening partners were supposed to help the reading partners review any missed words. Students recorded their reading times and their number of errors on a log that was submitted to the IRRC. Teachers monitored their students during the practice and ensured all the procedures were followed.

Participants

Students from 21 elementary schools in 10 school districts across Iowa participated in this study. Initially, the families of 1,029 fourth-grade students gave consent for their children to participate. Fifteen of those students either withdrew from the study, moved, or did not submit any reading logs (attrition = 1.5%). The research team removed another 202 students (Varied Practice = 100; Repeated Reading = 102) from the analysis due to a lack of complete FAST data \(n = 11\), a lack of demographic data \(n = 148\), having a winter FAST score of 43 words correct per minute or less \(n = 10\), reading without the assigned partner for more than 5 sessions \(n = 14\), or not staying in the assigned practice condition \(n = 4\). This left a total of 827 fourth-grade students for analysis, as shown in Figure I below.

Figure I. Change in sample of fourth-grade students from recruitment to analysis.

Z-tests showed no significant difference in the treatment or control groups following attrition or the removal of students for lack of complete data. Student demographics were balanced between the two practice conditions with no statistically significant differences between their characteristics as shown in Table 1 below.
Similarly, the two practice groups were balanced in their pretest FAST scores and their adherence to the study procedures, as shown in Table 2 below.

**Table 2. Means and Standard Deviations for Pretest FAST Scores and Fluency Practice Fidelity**

<table>
<thead>
<tr>
<th>Fluency Practice Group</th>
<th>N</th>
<th>Mean (Winter FAST)</th>
<th>SD</th>
<th>Mean (Adherence)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varied Practice</td>
<td>405</td>
<td>143.98</td>
<td>37.35</td>
<td>96.84</td>
<td>7.37</td>
</tr>
<tr>
<td>Repeated Reading</td>
<td>422</td>
<td>143.05</td>
<td>39.09</td>
<td>96.13</td>
<td>8.12</td>
</tr>
<tr>
<td>Total</td>
<td>827</td>
<td>143.50</td>
<td>38.23</td>
<td>96.48</td>
<td>7.77</td>
</tr>
</tbody>
</table>

There were no statistically significant differences between the groups on either pretest FAST scores or adherence to study procedures. Schools administered the FAST oral reading fluency test, referred to as CBMreading (Curriculum-Based Measurement for Reading). The cut score indicating that students were reading proficiently at the winter FAST screening period for fourth grade was 136 words read correctly per minute, so the average scores in both groups were above the benchmark by about 7 words read correctly.

**Study Results**

The analysis of students’ posttest FAST scores (spring administration) took into account that students were nested within different classrooms which were nested within different schools. The analysis also controlled for students’ pretest FAST scores (winter administration), the number of sessions each student completed during the study, gender, race, and whether the student was identified as an English learner, receiving free or reduced-price lunch, in special education, or in gifted education. The only variables that were found to be statistically significant in explaining spring FAST scores were the winter FAST scores, whether students were in special education, and the fluency practice condition (see Table 3 below).

Even after accounting for students’ pretest FAST scores, on average, the Varied Practice group significantly outperformed the Repeated Reading group at posttest (mean difference = 2.018; difference standard error = 1.002; p-value = .044). The number of sessions in which a student participated was found to have a positive relationship with spring FAST scores, but it was not a statistically significant factor.
Table 3. Model Results for Analysis of Students’ Posttest FAST Scores

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Variable</th>
<th>Estimate</th>
<th>Standard Error (SE)</th>
<th>t statistic</th>
<th>p-value</th>
<th>Effect Size</th>
<th>SE of Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring FAST</td>
<td>Intercept</td>
<td>18.895</td>
<td>4.485</td>
<td>4.213</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Varied Practice</td>
<td>2.018</td>
<td>1.002</td>
<td>2.014</td>
<td>0.044</td>
<td>0.052</td>
<td>0.171</td>
</tr>
<tr>
<td></td>
<td>Winter FAST</td>
<td>0.933</td>
<td>0.016</td>
<td>58.150</td>
<td>&lt;0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of sessions</td>
<td>0.227</td>
<td>0.142</td>
<td>1.596</td>
<td>0.111</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender</td>
<td>-1.643</td>
<td>1.014</td>
<td>-1.621</td>
<td>0.105</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Black</td>
<td>1.004</td>
<td>2.339</td>
<td>0.429</td>
<td>0.668</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hispanic</td>
<td>3.996</td>
<td>2.383</td>
<td>1.677</td>
<td>0.094</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>-1.323</td>
<td>4.755</td>
<td>-0.278</td>
<td>0.781</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>American Indian</td>
<td>-3.975</td>
<td>4.078</td>
<td>-0.975</td>
<td>0.332</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other race</td>
<td>3.738</td>
<td>3.602</td>
<td>1.038</td>
<td>0.300</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>English learner</td>
<td>-1.264</td>
<td>2.746</td>
<td>-0.460</td>
<td>0.646</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gifted</td>
<td>0.363</td>
<td>1.911</td>
<td>0.190</td>
<td>0.849</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Free/reduced lunch</td>
<td>0.646</td>
<td>1.123</td>
<td>0.575</td>
<td>0.565</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Special education</td>
<td>-3.699</td>
<td>1.829</td>
<td>-2.023</td>
<td>0.043</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. * = Statistically significant results at α < .05.

Although students in the Varied Practice condition significantly outperformed students in the Repeated Reading condition, the effect size was negligible (ES = 0.052). This indicates that the results were statistically significant but not practically significant. In other words, teachers likely would not notice any difference in students’ performance whether they were in Varied Practice or Repeated Reading. The cut score indicating that students were reading proficiently at the spring FAST screening period for fourth grade was 150 words read correctly per minute. The unadjusted posttest means indicated that students in the Repeated Reading condition were above the benchmark by about 7 words read correctly, and students in the Varied Practice condition were above the benchmark by about 10 words read correctly.

Notably, the average oral reading fluency growth in both practice groups exceeded the expected rate of improvement for fourth grade. According to the FAST developers, students who improve at a rate near the 90th percentile would increase their oral reading fluency scores by about 1.5 words per week (Aldrich, 2017). This would be considered very ambitious growth that not many students could achieve. Given that the fluency instruction spanned an average of 12 weeks during the study, students demonstrating growth near the 90th percentile would have improved their FAST scores by 18 words read correctly per minute. Based on the adjusted scores used for the statistical analysis, students in Repeated Reading improved on average by 18.90
words read correctly per minute, and students in Varied Practice improved on average by 20.91
words read correctly per minute.

Using the suggested rate of growth of 1.5 words correct per week, the Varied Practice
group achieved slightly more than an extra week’s worth of improvement over the students in
Repeated Reading who spent the same amount of time in fluency practice (i.e., Varied Practice
increased by an additional 2.01 words read correctly per minute). However, both groups
demonstrated exceptional growth. Improvement near the 50th percentile is considered average
(Aldrich, 2017) and would have resulted in an increase of 11.76 words per minute during the
study. Improvement near the 75th percentile is considered ambitious but realistic for students to
achieve (Aldrich, 2017). Such a rate of improvement would have resulted in an increase of 15.36
words per minute.

Implications for Classroom Instruction

One of the reasons that Repeated Reading has been considered an evidence-based
practice is because it has been studied a great deal (c.f., Lee & Yoon, 2017). Studies of non-
repetitive reading interventions have been sparse but have demonstrated at least comparable
results to repeated reading (Zimmermann & Reed, 2018). The finding that the IRRC’s new
instructional approach, Varied Practice, had statistically significant positive effects when
compared to Repeated Reading is encouraging and suggests other means of having students
practice their fluency may be beneficial. However, an evidence base must be built iteratively over
multiple studies that consistently find positive effects.

To support teachers and families who are interested in offering their students an
alternative to repeatedly reading the same passage, the IRRC has posted the 30 sets of Varied
Practice passages for download. Although future research will address other methods for
providing students fluency practice without repeatedly reading the same text, it is important to
remember that the average improvement on FAST CBMreading was considered ambitious in
both the Repeated Reading and Varied Practice conditions. Providing opportunities for students
to practice their oral reading fluency is important for helping fourth-grade students continue to
develop their abilities.
References


