Using Music- and Drama-based Instruction to Teach Students to Read: An Evaluation of Reading In Motion's K-3 Grade Program 2004-2008
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Using Music- and Drama-based Instruction to Teach Students to Read:
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This study describes a four-year research project aimed at evaluating Reading In Motion's kindergarten through third grade arts-based supplemental reading program (RIM). This evaluation reports on data from students who participated in the program during all four years of the project. The goal of the evaluation was to determine the extent to which RIM teaching artists taught the students to read at grade level by the end of third grade and the extent to which this instruction was more (or less) effective than other instructional methods at similar schools within the school district. This study does not examine the use of RIM curricula by classroom teachers, which will be the subject of future research. For the purpose of this study, the classroom teachers and teacher aides did not lead RIM lessons, but were cooperative observers.

PROGRAM DESCRIPTION

Reading In Motion developed and implemented RIM, an interactive music- and drama-based reading program, with kindergarten through third grade students during the 2004-2008 school years. Two experienced RIM teaching artists implemented the program in two Chicago public schools as a supplement to the schools' reading curricula. Six classrooms used RIM's music- and drama-based curriculum to teach the following skills in each grade:

- **Kindergarten:** Identifying initial sounds with fluency, such as students identifying the picture beginning with a certain sound, segmenting words into phonemes, and reading nonsense words.
- **First grade:** Decoding letters and words for the first half of the year, and then decoding words, sentences, and paragraphs for the second half of the year.
- **Second and third grades:** Reading words, sentences, and paragraphs with accuracy, speed, and expressiveness, with increasingly difficult text.

The components of the kindergarten through third grade program included whole group instruction, small group instruction, partner reading, independent work areas, fluency warm-ups, assessment, and professional development for the RIM teaching artists implementing the program. During each year of the four-year program, RIM teaching artists implemented the supplemental program for 40 minutes each school day over a period of 32 weeks from September to June. The classroom teachers and teacher aides did not lead RIM lessons, but were cooperative observers.

WHOLE GROUP INSTRUCTION

Reading In Motion conducted whole group instruction with all students in a given classroom for 40 minutes each week (see Appendix A for a sample schedule). The general structure of the whole group sessions began with a brief warm-up, followed by two or three activities designed to allow students to practice literacy skills through music and drama (see Appendix A for a sample whole group activity).

SMALL GROUP INSTRUCTION

A typical small group session consisted of 20 minutes of short literacy activities and games (see Appendix A for an example of a small group activity) that allowed individual students, in groups of three or four students, to practice the skills at a much higher rate of response and feedback than could be achieved in a whole group setting. The small group setting also allowed teaching artists to target instruction according to the skill needs of individual students.
From October to June of each year, RIM teaching artists conducted small group instruction in 20-minute sessions with small groups of students four days per week. In kindergarten and first grade, the RIM teaching artist conducted two sessions in one day with different students in each group, whereas in second and third grade, the number of sessions was reduced to one in a day. RIM teaching artists assigned students to small groups of three to four students based on results of monthly testing using Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments, combined with input from classroom teachers. Depending on the level of determined need, students were assigned to either zero, one, or two days of small group instruction per week. As a student’s needs changed during the program, the amount of small group activity also changed.¹

**PARTNER READING**

In second and third grade, partner reading was conducted in 20-minute sessions with all students four days per week. Partner reading entailed pairs of students reading scripts and characters in story, followed by answering questions about the story and drawing images from the story. All students were paired, based on monthly tested DIBELS reading levels.

The teaching artists often tailored the program to student skills. For example, some classrooms were less adept at transitioning from one activity to another. Thus, rather than participating in 20 minutes of small groups and 20 minutes of partner reading in one day, the students would sometimes participate in small groups for 40 minutes on one day, and then partner reading for 40 minutes on the next day. This tailored approach maximized the amount of student time-on-task by reducing transitions from one activity to the next, but still exposed students to the same amount of time on each activity over the course of the week.

**INDEPENDENT WORK AREAS**

Independent student work areas were used four days per week to engage students in educational, developmentally-relevant literacy activities while the teaching artists worked with small groups of students on reading. At the beginning of the school year, teaching artists spent two weeks acclimatizing the students to the different work areas before they began holding small group sessions during the work area time. Thereafter, students rotated through two work areas each day—spending about twenty minutes in each area. In each work area, students worked individually or in groups of three to six students. The skills were complementary but in no way synonymous with the skills being taught in small group instruction. For example, kindergarten and first grade students practiced reading and writing as well as developmental skills, such as fine motor, problem solving and social skills. While the general goals are the same, the activities become more complex so as to challenge the students as they develop their skills. For example, in kindergarten the students work with books, building blocks, play dough, and a variety of writing utensils and paper. In first grade, there is less emphasis on dexterity and more advanced reading activities are added, such as listening to books on CD while following along with the book, spelling in pairs (in which one student acts as the teacher), sorting words, and reading multipart scripts.

**FLUENCY WARM-UPS**

Classroom teachers were provided with five to ten-minute fluency warm-ups to use with the whole group of students every day. The “Fluency Warm-Ups” sample exercise in Appendix A is indicative of the types of activities that were used as fluency warm-ups. The fluency warm-ups were designed to further support the students’ learning of the targeted skills by providing additional practice. Teaching artists checked in with teachers on a consistent basis to encourage daily use of the warm-ups.

¹ From April through June of second grade only, lower-scoring students received extra doses of small group sessions from one to four days per week. To carry this out, an additional RIM staff conducted small groups during the RIM instructional period.
ASSESSMENT

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is a set of standardized, individually administered measures of early literacy development. In accordance with DIBELS procedures (DIBELS website, 2008a), participating students were assessed each school year before the program, at its midpoint, and once the program was completed. The DIBELS assessments were used to measure students’ literacy skills as they progressed from kindergarten through third grade. Scores on the DIBELS tests were also used to establish students’ levels of need for small group instruction and determine improvement, as well as to assess the effectiveness of the program overall. Lastly, Reading In Motion staff used the DIBELS each month between testing periods to monitor student progress and design individualized instruction to address students’ needs, which included increasing or decreasing the amount of small group work.

TEACHING ARTIST TRAINING

For this study, Reading In Motion is implemented by RIM staff, while classroom teachers and aides observe the classroom and provide support with behavioral management but do not instruct students directly. Each year, RIM teaching artists were trained in the curriculum and supported via intensive professional development that included experiencing the activities as students and practicing teaching sessions of the activities via simulation. Each year, the curriculum designer delivered two training sessions to teaching artists: a two-day session in the early fall and another two-day session in the winter. Additionally, each teaching artist spent two weeks in August and two weeks in January preparing for each semester. During this time they were in the RIM office and had access to several resources, including each other, the curriculum designer, and other RIM staff.

Two-hour support meetings for the teaching artists occurred every other week for the entire school year of kindergarten through third grade. These meetings allowed teaching artists to report on their classroom events as well as receive additional training and support. During the middle of first grade, a short component was added to discuss events that were particularly successful or problematic in the classroom.

TEACHER’S ROLE

Teachers and teacher aides had no formal role in implementing the RIM curriculum, aside from conducting the optional fluency warm-ups just described. Reports from RIM staff indicated that in most cases, either the aide or the teacher remained in the room and assisted the artist by managing student behavior at the independent workstations. In no case did teachers intervene to instruct students directly during the teaching artists’ visits.
EVALUATION METHODS

RESEARCH DESIGN

To assess the impact of the Reading In Motion program on students’ early literacy skills, 3D Group employed a quasi-experimental research design using a matched control group. The two RIM schools were selected in 2004 based on a prior relationship with Reading In Motion, leadership support of the program, and having a minimum of two full-day kindergarten classes. Study participants were also chosen based on low percentages of English Language Learner students so the research could identify the program’s effects with students whose first language is English. Demographic analyses of these schools showed that the students were predominately African American and low income, and had 18-35% of students reading at grade level (based on the Iowa Test of Basic Skills (ITBS)). Table 1 displays the demographic characteristics of the RIM schools chosen to participate in the study.

After participant schools were selected, possible matches were identified for the control group. Control schools were first selected if they matched the participant schools on the following criteria: higher than 90% low income, lower than 35% student mobility rate, a catchment area in which greater than 95% of population was African American and fewer than 70% of the population over age 25 had a high school degree (both based on 2000 census data), and fewer than 5% English Language Learner students. Sixty-two elementary schools matched the participant schools on these criteria. Schools in similar neighborhoods were then matched to four or five schools with the most similar mobility rates and reading test scores. Reading In Motion asked the matching schools if they were willing to participate in the research, beginning with schools where they had prior relationships. Reading In Motion selected the two schools to comprise the matched control group. Table 1 illustrates similarities between schools whose students received RIM and the control schools.

Table 1. Criteria for Matching RIM and Control Schools

<table>
<thead>
<tr>
<th>Matching Criteria</th>
<th>RIM School 1</th>
<th>RIM School 2</th>
<th>Control School 1</th>
<th>Control School 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language Learners*</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>African American*</td>
<td>98.3%</td>
<td>98.1%</td>
<td>98.3%</td>
<td>98.9%</td>
</tr>
<tr>
<td>Reading Level on Iowa Test of Basic Skills in 2003*</td>
<td>33.1%</td>
<td>23.3%</td>
<td>28.7%</td>
<td>27.6%</td>
</tr>
<tr>
<td>Age 25 and Over with High School Degree*</td>
<td>64.8%</td>
<td>61.8%</td>
<td>59.8%</td>
<td>69.7%</td>
</tr>
<tr>
<td>Low Income Status*</td>
<td>100.0%</td>
<td>96.3%</td>
<td>100.0%</td>
<td>99.5%</td>
</tr>
<tr>
<td>Student Mobility Rate*</td>
<td>33.6%</td>
<td>19.7%</td>
<td>31.1%</td>
<td>20.0%</td>
</tr>
</tbody>
</table>

Data analysis provided by Child Health Data Lab of Children’s Memorial Research Center, Chicago IL.
* Original data source 2000 Census.

Because of student mobility, some students participated in the study during some of the year, while others participated in all four years (kindergarten through third grade). That is, there were some students who joined the schools in the study after they had already completed kindergarten, and some students transferred to other schools midway through the study. However, the analyses for the present study were limited to the stable group of students who attended either the RIM or control schools during all four years of the study—from kindergarten through third grade. These students were present throughout the duration of the study, as evidenced by taking the DIBELS pre-test in kindergarten, at least one DIBELS test in first and second grade,
and the final test at the end of third grade. This core set of 57 RIM and 48 control students, shown in Table 2, is the focus of this study.²

Table 2. Sample of Students Across All Four Years of the Study

<table>
<thead>
<tr>
<th>RIM</th>
<th>173</th>
<th>141</th>
<th>69</th>
<th>57</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>170</td>
<td>130</td>
<td>90</td>
<td>48</td>
</tr>
</tbody>
</table>

MEASURES

3D Group researchers used multiple methods of data collection and analyses for this evaluation as described in this section.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) Assessments

DIBELS assessments were used as a measure of student progress. DIBELS is a set of standardized, individually administered measures of early literacy development, which was used by over 15,000 schools in 2007-2008 (DIBELS website, 2008b). The measures are designed to monitor development of pre-reading and early reading skills, as well as identify instructional needs for each student.³ RIM staff who were not involved in implementing the program collected student scores on the DIBELS reading assessments for the RIM and control schools at three points each year (September, January, and June). Raters were provided with training and achieved inter-rater reliability before using the assessments. Once the scores were collected, RIM staff entered them into the DIBELS online data system. 3D Group obtained a copy of the students’ data from RIM at the end of each year. 3D Group researchers linked the four years of data by student and analyzed the data in relation to program goals. Table 3 below presents the skills tested for kindergarten through third grade, benchmarks for those skills, and test timeline (Good & Kaminski, 2002).

After the data was collected, researchers compared student scores on the Letter Naming Fluency, Initial Sound Fluency, and Oral Reading Fluency portions of the DIBELS assessment to benchmarks of success established by DIBELS (Good & Kaminski, 2002).

Table 3. Number of Sounds or Words Correctly Identified Per Minute, as Needed to Meet DIBELS Benchmarks

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Naming Fluency</td>
<td>8 -- --</td>
<td>-- -- --</td>
<td>-- -- --</td>
<td>-- -- --</td>
</tr>
<tr>
<td>Initial Sound Fluency</td>
<td>8 25 --</td>
<td>-- -- --</td>
<td>-- -- --</td>
<td>-- -- --</td>
</tr>
<tr>
<td>Phoneme Segmentation Fluency</td>
<td>-- 18 35</td>
<td>-- -- --</td>
<td>-- -- --</td>
<td>-- -- --</td>
</tr>
<tr>
<td>Nonsense Word Fluency</td>
<td>-- 13 25</td>
<td>24 50 --</td>
<td>-- -- --</td>
<td>-- -- --</td>
</tr>
<tr>
<td>Oral Reading Fluency</td>
<td>-- -- --</td>
<td>-- 20 40</td>
<td>44 68 90</td>
<td>77 92 110</td>
</tr>
</tbody>
</table>

² One RIM school (and its matched control school) was dropped from the study after first grade because the RIM school was restructured and all programs were removed.
³ The DIBELS website provides more detailed information about the assessment (http://dibels.uoregon.edu/).
Attendance
RIM teaching artists recorded student attendance during their daily classroom visits, including the type of activity the students participated in. At the end of the program, RIM staff entered the data and followed a series of data entry checks as prescribed by 3D Group to ensure data entry accuracy.

Interviews
3D Group interviewed RIM teaching artists and RIM staff three times over the course of the program. The interviews included the teaching artists, reading specialists, the curriculum designer, and RIM administrators. Researchers collected formative data on the program to help generate ideas for program improvement and support summative results.

Observations
3D Group used two methods for observing RIM. 3D Group researchers conducted in-person observations of the kindergarten and second grade programs. Researchers also viewed videotapes of the reading program in first and third grades. 3D Group viewed the full set of activities, including whole group activities, small group activities, and work areas. Both types of observations provided a sense of teaching artist and student roles during each of these activities, examples of students' work, and varying levels of student performance.

Non-RIM Reading Curricula Interviews
RIM staff also interviewed control and treatment teachers and Lead Literacy Teachers about the core reading curriculum taught by the classroom teacher. This included obtaining samples of the reading curriculum, and then in second and third grade, included information related to the degree that small group instruction was used.

RESULTS

COMPARABILITY OF GROUPS

Students
In the summer of 2004, the researchers carefully matched program schools to control schools on a variety of factors, including ITBS scores, mobility rate and demographics (see Research Design section of this report). Since the kindergarten students were new to the schools, DIBELS Letter Naming Fluency and Initial Sound Fluency scores were used to confirm that students in the program and control groups entered school with comparable skill levels. This section demonstrates that there was no significant difference between the groups on both types of tests administered upon entry to kindergarten: Letter Naming Fluency and Initial Sound Fluency.

Letter Naming Fluency
3D Group researchers used DIBELS Letter Naming Fluency scores to confirm that students in the RIM and control groups entered school with comparable skill levels. DIBELS Letter Naming Fluency (LNF) assesses the number of randomized letters that a child can recognize in one minute (Kaminski & Good, 1996). LNF was assessed in September 2004 at the beginning of RIM. Researchers used LNF as one baseline to
determine if students in the program and control groups entered the program with comparable skills. Researchers compared the mean scores on ISF for each of the schools using a one-way ANOVA. Means and standard deviations are presented in Table 4. Results of the one-way ANOVA comparing the four schools revealed no significant differences between the incoming kindergarten students’ scores on Initial Sound Fluency, $F(3, 101) = .85$, $p = .47$.

Table 4. Pre-test Mean Scores and Standard Deviations for RIM and Control Groups on Letter Naming Fluency Upon Entering Kindergarten (September 2004)

<table>
<thead>
<tr>
<th>School</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIM School 1</td>
<td>11.27</td>
<td>26</td>
<td>13.28</td>
</tr>
<tr>
<td>RIM School 2</td>
<td>14.10</td>
<td>31</td>
<td>13.59</td>
</tr>
<tr>
<td>Control School 1</td>
<td>15.55</td>
<td>20</td>
<td>14.36</td>
</tr>
<tr>
<td>Control School 2</td>
<td>10.43</td>
<td>28</td>
<td>10.25</td>
</tr>
</tbody>
</table>

To further investigate possible differences, researchers conducted an independent samples t-test to compare the mean scores on the September LNF measure for the RIM and control groups (Figure 1). No significant difference was found, $t(103) = .10$, $p = .92$. Thus, students in the RIM and control groups appear to have entered the study with nearly identical early literacy skill levels.

Figure 1. Kindergarten Pre-test scores for Letter Naming Fluency
Initial Sound Fluency

3D Group researchers used DIBELS Initial Sound Fluency scores to confirm that students in the program and control groups entered school with comparable skill levels. DIBELS Initial Sound Fluency (ISF) is a measure of phonological awareness that assesses a child’s ability to recognize and produce the initial sound in an orally presented word (Kaminski & Good, 1996). ISF was also first assessed in September 2004, at the same time as the LNF assessment described above. Since the September assessment was performed at the start of the program, ISF scores were used as baseline data to identify whether students in the program and control groups entered the program with comparable skills. Researchers compared the mean scores on ISF for each of the schools using a one-way ANOVA. Means and standard deviations are presented below in Table 5. Results of the one-way ANOVA comparing the four schools revealed no significant differences between the incoming kindergarten students’ scores on Initial Sound Fluency, $F(3, 101) = .78, p = .51$.

Table 5. Pre-test Mean Scores and Standard Deviations for RIM and Control Groups on Initial Sound Fluency Upon Entering Kindergarten (September 2004)

<table>
<thead>
<tr>
<th>School</th>
<th>Mean</th>
<th>N</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIM School 1</td>
<td>10.46</td>
<td>26</td>
<td>5.87</td>
</tr>
<tr>
<td>RIM School 2</td>
<td>9.97</td>
<td>31</td>
<td>7.70</td>
</tr>
<tr>
<td>Control School 1</td>
<td>8.00</td>
<td>20</td>
<td>6.60</td>
</tr>
<tr>
<td>Control School 2</td>
<td>8.93</td>
<td>28</td>
<td>6.45</td>
</tr>
</tbody>
</table>

To further investigate possible differences, researchers conducted an independent samples t-test to compare the mean scores on the September ISF measure for the RIM and control groups. No significant difference was found as illustrated in Figure 2, $t(103) = 1.50, p = .14$. Thus, researchers concluded that students in the program and control groups appear to have entered the study with comparable early literacy skill levels.

Figure 2. Kindergarten Pre-test scores for Initial Sound Fluency
Non-RIM Reading Curriculum

3D Group researchers interviewed control and treatment classroom teachers and Lead Literacy Teachers in spring of 2007 and fall of 2008\(^4\) to explore whether the amount of time students spent in reading instruction was comparable between the two groups. Teachers were asked to estimate the number of minutes each week that their students spent in reading instruction. Results showed that control and RIM students were exposed to about the same amount of reading time. Reading In Motion students were generally exposed to about 1 additional hour of instruction per week (Table 6), which calculates to 8% more reading instruction in second grade and 14% more reading instruction in third grade.

Also illustrated in Table 6, all classrooms in the second and third grade employed small group instruction with students for a portion of their reading instruction. Classrooms received a similar portion of small group time, with RIM students spending from 4% to 7% more time in small group instruction.

Table 6. Teacher Estimates of Time Control and RIM Classrooms Spent in Reading Instruction

<table>
<thead>
<tr>
<th>Total hours in reading instruction per week (includes RIM instruction)</th>
<th>RIM Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd grade 3rd grade</td>
<td>14 8</td>
<td>13 7</td>
</tr>
<tr>
<td>Portion of time in small groups of 1 to 4 students, while other students work independently (includes RIM instruction)</td>
<td>41% 49%</td>
<td>37% 42%</td>
</tr>
</tbody>
</table>

Researchers also examined non-RIM reading instruction taught by the classroom teachers. Curricula from each year and school is presented in Table 7. From kindergarten through third grade, all but one school used highly standardized curricula, with a clear scope and sequence and often scripted lessons for teachers to deliver.

Table 7. Reading Curriculum Used by Each School in the RIM and Control Groups

<table>
<thead>
<tr>
<th>School</th>
<th>Kindergarten</th>
<th>First Grade</th>
<th>Second Grade</th>
<th>Third Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIM School 1</td>
<td>Harcourt Brace Collections Reading/Language Arts Program</td>
<td>Harcourt Brace Collections Reading/Language Arts Program</td>
<td>Harcourt’s Trophies</td>
<td>Harcourt</td>
</tr>
<tr>
<td>RIM School 2</td>
<td>Houghton Mifflin Reading</td>
<td>Houghton Mifflin Reading</td>
<td>Houghton Mifflin Reading &amp; America’s Choice</td>
<td>Houghton Mifflin Reading &amp; America’s Choice</td>
</tr>
<tr>
<td>Control School 2</td>
<td>Harcourt Brace Collections Reading/Language Arts Program</td>
<td>Harcourt Brace Collections Reading/Language Arts Program</td>
<td>Harcourt’s Trophies</td>
<td>Harcourt’s Storytown</td>
</tr>
</tbody>
</table>

One exception was a control school that used less standardized curricula to teach kindergarten, as well as to supplement first and second grade. During kindergarten, this control school used the Pearson Learning

\(^4\) Data was not collected in kindergarten or first grade.
program (Sing, Spell, Read & Write)—a program that used songs to involve students. However, unlike RIM, they did not use differentiated instruction in small groups based on frequent assessment. Additionally, in first and second grade, this school supplemented its reading curriculum with Phonemic Awareness by Michael Heggerty. While Heggerty’s oral and speed emphasis are similar to RIM, the curriculum is designed for whole group instruction only, and for shorter periods of time (15 minutes per day compared with RIM’s 40 minutes).

ATTENDANCE

While attendance data was not provided by the control schools, RIM teaching artists collected daily attendance data to understand if students received enough of the program to improve their skills. Attendance was collected daily for all four years in RIM School 1, whereas RIM School 2 had full attendance data in kindergarten through second, and intermittently through third grade.5

Student attendance rates were between 72% and 99% over the program’s four years. The median attendance rate was 96%. Thus, students seemed to receive enough of the program to interpret effects.

These attendance rates are inflated by the nature of this study’s design. All RIM and control students in this study were required to attend the participating schools from the beginning of the program through the end of the program as evidenced by taking the first DIBELS assessment in kindergarten and the last DIBELS assessment in third grade, as well as at least one test in both first and second grades. Because of this requirement, it is likely that some RIM and control students with lower attendance rates may have not met the requirement and thus were excluded from the study, resulting in high attendance rates.

OUTCOMES

Once it was established that the RIM and control groups began kindergarten at similar reading levels and that the schools were comparable, 3D Group analyzed student outcomes. First, the RIM and control groups’ DIBELS scores from kindergarten through third grade were compared to determine whether there was a difference in reading skill over time. Then 3D Group compared RIM to other programs across the nation from the DIBELS database.

Meeting the Final Benchmarks

After establishing that the RIM and control students entered kindergarten with no significant differences on their reading skills, 3D Group analyzed DIBELS scores to see if there was a significant difference between the groups on whether they met the final reading benchmarks in each grade over time. Figure 3 outlines this progression by test and grade. As desired, there was not a significant difference between RIM and control students in reading skills when they entered the program in kindergarten. This indicates that both groups had similar reading levels when they first joined the program.6 By the end of kindergarten, the program had already begun to show an effect. That is, a significantly greater percentage of RIM students met the

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5 In RIM School 2, intermittent weeks of RIM attendance data were lost after being collected in third grade; approximately one half of the data was misplaced and irretrievable.
6 Kindergarten pre-tests (Initial Sound Fluency: χ² (1, 103) = 2.55, p=.11; Letter Naming Fluency: χ² (1, 103) = .26, p=.61)
benchmark as compared to the control group on both tests at the end of kindergarten.\(^7\) This trend continued in first grade, in which significantly more RIM students met the benchmark than control students.\(^8\) In second grade, a greater percentage of RIM students also met benchmark than control students; however, the difference between RIM and control group was not statistically significant.\(^9\) But by the time the students completed third grade, the difference between the two groups was statistically significant once again,\(^{10}\) with a greater percentage of RIM students meeting the benchmark than control students.

Figure 3. Percentage of Students that Met Test Benchmarks By Grade Over Time

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\(^7\) Kindergarten post-tests (Phoneme Segmentation Fluency, $\chi^2 (1, N=104) = 44.27, p<.001$; Nonsense Word Fluency, $\chi^2 (1, N=104) = 16.27, p<.001$)

\(^8\) First grade post-test (Oral Reading Fluency: $\chi^2 (1, N=103) = 7.50, p<.01$)

\(^9\) Second grade post-test (Oral Reading Fluency: $\chi^2 (1, N=101) = 3.36, p=.07$)

\(^10\) Third grade post-test (Oral Reading Fluency: $\chi^2 (1, N=105) = 18.02, p<.001$)
Ultimately, it is Reading In Motion’s goal to get 80% of students to benchmark level by the end of the program in third grade. To assess third grade reading level, 3D Group assessed students with the Oral Reading Fluency assessment. This test measures the number of words a student correctly and fluidly reads aloud in one minute with less than three seconds pause between words (DIBELS website, 2008c). As Figure 4 illustrates, significantly more RIM students (60%) met the final Oral Reading Fluency (ORF) benchmark than control students at the end of third grade (19%), $\chi^2 (1, N=105) = 18.02, p<.001$.

Figure 4. Percentage of Students that Met Oral Reading Fluency Benchmark by End of Third Grade
Words Read Per Minute

While the previous section explored the portion of students meeting benchmark, this section describes the average number of words that the students could read per minute over the course of RIM. Researchers used the DIBELS Oral Reading Fluency tests to determine how many words students could read fluidly per minute. As illustrated in Figure 5, the first time that this test was administered (middle of the first grade), students were at similar skill levels with no significant difference between RIM and control students. By the end of first grade, RIM students read a significantly greater number of words per minute than the control schools. In second grade, while RIM students could read a greater number of words per minute on average, the difference between the RIM and control group was not statistically significant. However, by the end of third grade, RIM students could read, on average, a significantly greater number of words per minute than the control students.

Figure 5. Average Number of Words Read Per Minute on Oral Reading Fluency Tests Over Time

![Graph showing average number of words read per minute over time with significant differences marked.]

11 First grade ORF pre-test administered in mid-year: t(102) = .87, p=.39
12 First grade ORF post-test administered at end of year: t(101) = 2.55, p<.05
13 Second grade ORF post-test administered at end of year: t(99) = 1.58, p=.12
14 Third grade ORF post-test administered at end of year: t(103) = 4.12, p<.001
Upon closer examination of third grade, the culminating point for students in the study, results show that RIM students had greater reading skills than control students. Results, displayed in Figure 6, show at a statistically significant level that RIM students could read an average of 30 words per minute more than the control students ($t(103) = 4.12, p<.001$).

**Figure 6. Average Number of Words Read Per Minute on Oral Reading Fluency Test at End of Third Grade**
National Normative Comparison

Final results for RIM students on the ORF measure were also compared with the DIBELS normative base of scores, which was derived from a national sample of third grade students (Good, et al., 2003). Overall, RIM was better at helping students meet the ORF benchmark than most of the programs in the DIBELS database as shown in Figure 7.

To determine this, ORF pre-scores from the beginning of third grade were used to categorize students according their initial third-grade level of ORF performance in accordance with Good, et al. (2003). The poorest performing students were identified as “at risk”, mid-level students were identified as “some risk”, and better performing students were identified as “low risk”. Analyses were then conducted to determine how effective RIM was at getting each of the risk groups to meet the end-of-year benchmark in comparison to programs in the DIBLES database. In the “at risk” group, RIM helped 6% of the students meet the ORF benchmark by year’s end, which is more effective than 80% of the programs in the DIBELS database (see Figure 7). RIM also helped 53% of the “some risk” students to reach the ORF benchmark by year’s end, which is better than 80% of the programs in the DIBELS database. Additionally, RIM helped 100% of the students in the “low risk” category to reach the end-of-year ORF benchmark, which is more effective than 95% of the programs in the DIBELS database.

Figure 7. National Percentile Ranking of RIM Performance on Oral Reading Fluency at End of Third Grade

![Bar chart showing national percentile ranking of RIM performance on oral reading fluency at end of third grade for different instructional categories: At Risk (n=17), Some Risk (n=15), Low Risk (n=25).]
CONCLUSION

The data presented in this report suggest that Reading In Motion for kindergarten through third grade provides an effective supplement to schools’ existing reading curricula and helps students develop early literacy skills. The following specific conclusions can be drawn from the evaluation results:

- More than three times as many students who were in Reading In Motion from kindergarten through third grade met the reading benchmark at the end of third grade compared to students who used other programs to learn reading. Specifically, 60% of the RIM students met the benchmark, whereas 19% of the control students met the benchmark.

- After their first four years of formal education, students who used Reading In Motion to learn reading were able to read an average of 30 more words per minute than the control students.

- Reading In Motion was more effective than 80% to 95% of all third grade programs, according to DIBELS’ national normative data of third grade reading instruction.

- While Reading In Motion is more effective at helping students learn to read than the standard curricula taught in the control schools, Reading In Motion’s success at this point falls short of their intended goal of 80% of students reading at grade level.
REFERENCES


### Sample Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday (M)</th>
<th>Tuesday (T)</th>
<th>Wednesday (W)</th>
<th>Thursday (Th)</th>
<th>Friday (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:10 - 9:20</td>
<td></td>
<td>Daily Fluency Warm-Ups</td>
<td>Engage minds, practice Reading in Motion skills and get the day off to the right start!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:25 - 9:50</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>9:55 - 10:35</td>
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<tr>
<td>10:40 - 11:20</td>
<td></td>
<td>Small Groups and Work Areas</td>
<td></td>
<td>Whole Group Instruction</td>
<td></td>
</tr>
<tr>
<td>11:20 - 12:00</td>
<td></td>
<td></td>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00 - 1:00</td>
<td></td>
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<td>1:00 - 1:40</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1:40 - 3:00</td>
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</table>
Whole Group Activities—Sample Instructions for Reading In Motion Teaching Artists

All students meet once a week to participate in Whole Group, which lasts 40 minutes. This 1st Grade sample covers 21 minutes of a 40-minute session of Whole Group. It is conducted during week #16 of the 32-week curriculum.

Note: Before class begins, seat the students in Partner Reading pairs.

**Sound to Symbol Echo with Music:**

**Do** Pick up the letter cards.
- Separate the a, i, o, u, and e cards from the deck of letter cards.

**Say** We are going to start out today comparing a, i, o, u, and e.
- As I hold up the letter cards, tell me the sounds and show me the hand movements that go with the sounds.

**Do** Play track 13 on the CD.
- In tempo with the music, drill the students on the a, i, o, u and e cards.
- Mix up the order of the cards so the students can’t memorize the order.
- Continue to drill the students until each letter card has been shown three or four times.
- Check students’ responses for accurate sounds and hand movements.

**Say** Now, I’m going to call on some of you for a solo turn.

**Do** Call on the students you do not see in a small group.
- Drill each child individually on the five letters.
- Mix up the order of the cards.
- Use this very brief drill to check the progress of students who are not in small group.
- They should have 100% accuracy with the five vowels.

**“Word Blues”:**

**Say** Now we are going to read some nonsense words, and use our blues song to help us.
- This week, we will focus on words with the /e/ sound in the middle.

**Do** Pick up the card tray and letter cards.
- Place the nonsense word mez in the tray.
- Place the remaining letter cards in the back row of the card tray.

**Say** As I point to the letters, tell me each sound.
- When I sweep my finger across the word, blend the sounds and say the word.
- Here we go.

**Do** Play track 8 on the CD, and sing the song.
- Use the letter cards to form words from the word list printed below.
- After each set of four words, sing the chorus.
- When the music runs out, turn off the CD.

**Say** Now let’s practice a cappella, or without music.
- I’m going to go a little bit faster.

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Do Drill the students, using words from the word list again, at a slightly faster pace. Allow the students to answer in unison.

Words
mez vej pef kec
yez rej sef gec
bez tej lef wec
vez pej kef hec

"Word Blues" 2:
Say Now, I want you to read the words and keep your voices running.
Do Place the nonsense word mez in the card tray.
Say This time, instead of starting and stopping our voices between the sounds, we are going keep our voices running.
Start your voice with the first sound and keep it going until you have said all three sounds.
It will sound like this.
/lm/ /le/ /lz/
Try it with me.
(All: /lm/ /le/ /lz/)

Do Change mez into yez.
Say Again.
(All: /ly/ /le/ /lz/)

Do Change yez to yev.
Say Again.
(All: /ly/ /le/ /lv/)
Now, I want you to try a few without my help.

Do Continue to change one letter at a time to create new nonsense words. Allow students to read the words with continuous voices.
Continue until the class has read five or six words.

Say Now, I'm going to give you each a chance to read a word on your own. Remember to keep your voices running.
I'll look at you when it is your turn.

Do Go around the room, giving each student a word to read from the list above. Respond to any incorrect answers by modeling the correct answer and allowing the student to try again.
Make sure each child gets a turn.

Say Now, let's see if we can read two words in a row.

Do Pick up the stack of two-word nonsense word cards. Hold up the mez yez card.

Say Keep your voices running and try these two with me.
(All: /lm/ /le/ /lz/, /ly/ /le/ /lz/)
Do Check the students’ responses, and repeat the two words if necessary.

Say Let’s read some more like this.

Do Continue to work through the two-word cards, allowing the students to read each set of words in unison.

Say Now it’s time to read some with the music.

Follow my cues. I’ll help you.

Do Play track 8 on the CD.

In time with the music, hold up a card and model reading two words at a time. Direct students to read along with you.

Example
mez  yez  (rest)
bez  vez  (rest)
vej  rej  (rest)
tej  pej  (rest)

After reading four cards, repeat the chorus:

I’ve got the blues
Hear what I say
I’m gonna read my nonsense words today

Words
mez  yez
pef  sef
jep  jem
bez  vez
lef  kef
teb  neb
vej  rej
kec  gec

Do When the song is over, turn off the CD.

Say Now, I want to give you a chance to read two words in a row on your own.

Do Go around the room and give each student a chance to read one of the two-word cards.

*Echo Read by Character Parts:*

Say Now it’s time to work on our script, *Lamb and Coyote*.

Do Pass out copies of *Lamb and Coyote*, Part 3 to all of the students.

Say If you are the partner sitting closest to the door, I want you to read the part of Coyote.

If you are the partner sitting farthest away from the door, I want you to read the part of Lamb. Let’s check to make sure that everyone knows which part to read.

Let me see the Lambs raise their hands.

Do Check students’ responses, and assist them as necessary.

Say Now let me see the Coyotes raise their hands.

Do Check students’ responses, and assist them as necessary.

Say I’ll read the lines first, then I want you to echo read your part.

Try to make your voice sound like mine.

Do Read the script, allowing students to echo read their lines.
Partner Reading:

Say  Now, it's time for you to read with your partner.
When I say begin, I want you to see if you can read the first page of your script.
Remember to take turns reading your parts.
When I say cut, I want you to freeze and listen to my next directions.

Do   Allow students to read the first page of the script with their partners.
Circulate around the room to coach and assist students as necessary.
Allow students to read with their partners for a short period of time (1-2 minutes), then cue them to stop.

Say  And...cut.

Do   Compliment good behaviors that you observed to reinforce the expectations you have for Partner Reading.
If there were problems with some partners, coach the students in the areas where you would like to see improvement.

Timed Reading Practice:

Say  Please turn your script over to the last section.

Do   Hold up your script to show the students the story section.

Say  Many of you worked with this version of the story, during small group.
It takes practice to read at the appropriate speed and make our words sound natural, like we are speaking.
So it is great that we can practice our story a few different times during the week.
Now I'm going to give you two turns to read this version of our story.
And, you will get to time yourself to help track your progress.

Do   Point to the classroom clock or hold up your timer.

Say  If you are the partner sitting closest to the door, I would like you to read first.
If you are the partner sitting farthest away from the door, I want you to listen.
Use your finger to follow along as your partner reads, and mark their last word with your finger in your script.
Ready...action.

Do   Allow students to read for 15 seconds.
Circulate around the room to listen, and assist students as necessary.
After 15 seconds, direct the students to stop by saying "cut."
Check to see that students have marked the last read word.

Say  Now it is time to switch.
If you are sitting farthest away from the door, it is now your turn to read.
And, those of you sitting closest to the door, it's your turn to track your partner's reading.
Don't forget to use your finger to follow along as your partner reads and mark the last word.
Ready...action.

Do   Allow students to read for 15 seconds.
Circulate around the room to listen, and assist students as necessary.
After 15 seconds, direct the students to stop by saying "cut."
Check to see that students have marked the last read word.
Say Now, both partners will get a chance to read again.
Do Allow both partners another turn to read for 15 seconds.
Say I want you to continue reading with accuracy, and challenge yourself to make your reading sound natural, like speaking.
Do Circulate around the room to listen, and assist students as necessary.
Do Collect the scripts.

Small Group Activities—Sample Instructions for Reading In Motion Teaching Artists

Teaching artists meet with several small groups of students four days a week for more individualized instruction. This 1st Grade sample covers 11 minutes of a 20-minute session with a small group, and is implemented during week #16 of the 32-week curriculum.

Sound to Symbol Echo:
Say We are going to begin today by comparing a, i, o, u, and e.
Do As I hold up the letter cards, you tell me the sounds and show me the hand movements that go with the letter.
Say Hold up the cards one at a time, and allow the students to generate the sounds and movements in unison.
Do Drill students on the a, i, o, u, and e cards.
Say Vary the pattern in which you show the five letters.
Do Continue to drill until each letter card has been shown two or three times.
Say Check students' responses for accurate sounds and hand movements.
Do Now, I'm going to give you each a turn to answer on your own.

Read Nonsense Words - Speed Read:
Say We are now going to read nonsense words with the /el/ sound in the middle.
Do Show Word Page D.
Say We will start by reading the first row.
Do I want you to look at the words with me.
Say Tell me the first, middle, and final sounds, and then I want you to blend the sounds to say the nonsense word.
Do I'll put my finger over each letter as you say the sound, and then sweep it across the word as you blend.
Say For this round, let's answer together.
Do Hold up the word page so it can be seen by all three students.
Say Here we go.
Do Put your finger above each letter, as the students give you the sounds.
Say Sweep your finger across the letters, as the students blend.
Do Assist as necessary.
Say Read the first two lines of words together.
Do Now, we are going to take turns reading the rows.
Say Position yourself so that you can see the second hand on the classroom clock, or use a stopwatch.

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Say Now, I want you to read as quickly as you can. I will time you.
I want you to tell me each letter sound.
Start here. (Point to the first letter.)
Then read this way. (Move your hand across the rest of the letters.)
Be accurate.
I'm going to add five seconds for each missed sound
Do Look at child #1.
Say You will go first.
Do Allow child #1 to read the words.
Say Now, you will each get another turn.
Do With a light-hearted spirit, announce the time.
Say Read a row of words to model using a continuous voice.
Say Keep track of the time.
Say Repeat the process with the other two students, assigning them a different row from the
Do word page.
Say See if you can match your last score or beat it.
Do Start your voice with the beginning sound and don't stop your voice until you say the last
Say sound of each word.
Do It will sound like this.
Say It will help you beat your last time, if you don't stop your voice between all of the sounds.
Do Give each student one more turn.
Say Optional Step: Give students a third turn. This time have them read the whole words as
Do blended words.
Say

Script: Lamb and Coyote:
Level 1: Echo Read the Script Sentence by Sentence
Say Now it is time to continue reading Lamb and Coyote to see what happens next in the story.
Do Let's begin by reading through the script sentence by sentence or line by line.
Say Repeat after me, and try to make your voice sound like mine.
Do As I read, I want you to use your finger to follow along with the words.
Say Then, when it is your turn to repeat the words, use your finger again to follow the words.
Do Using your finger to trace the words, read the first line.
Say Allow the students to repeat the line.
Do Read the next line, using a different voice to emphasize that another character is speaking.
Say Allow the students to echo read the second line.
Do Encourage them to match the expression in your voice for the lamb or the coyote.
Say Continue reading the text, using your finger to trace the words, and allowing the students to
Do echo read each line.

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Script: Partner Read the Script:

Say Now we are going to read the script with partners.
Do Pair the two strongest readers in the small group together.  
Assign them each a part to read (Lamb or Coyote). 
Pair yourself with the remaining student, and assign the student to read the part of Lamb.
Say Remember, your job is to take turns reading your lines with your partner.
You can keep track of whose turn it is by looking at the character pictures.
Do Hold up your script and point to the first character icon.

Say When your partner is reading, you should be using your finger to follow along with the words so that you will be ready to read your part when it is your turn. 
If you get stuck, you can help each other out by sounding out the word together or by telling your partner the word. 
Just remember to give your partner a chance to try to read it on her own first, before you jump in.
Or, you can skip the word and continue reading.
The one thing you shouldn't do is just sit there and stop reading.
I will know that you are doing a good job if I see you taking turns reading your lines and helping each other out.
When I say action, begin reading. When I say cut, I want you to freeze.

Do Say “action” and prompt the students to begin reading.
Begin reading the script with the remaining student.
As you read along with your student partner, listen to the other pair of students reading.
If the students are able to effectively Partner Read, allow them to read through the script.
If students are not able to Partner Read, call “cut” to direct them to stop.
Briefly give students feedback on how they can improve their partner reading.
Tell students they will have another chance to practice later in the week.

Fluency Warm-Up — Sample Instructions for Classroom Teachers

Classroom teachers were provided with five to ten-minute fluency warm-ups to use with the whole group of students every day. This first grade sample covers one day of the week from week #3 of the 32-week curriculum.

Say – Repeat after me.
Do – Go through the list saying the initial sound and then the whole word.

<table>
<thead>
<tr>
<th>big</th>
<th>sit</th>
<th>tip</th>
<th>mad</th>
</tr>
</thead>
<tbody>
<tr>
<td>bat</td>
<td>sock</td>
<td>tap</td>
<td>men</td>
</tr>
<tr>
<td>bed</td>
<td>see</td>
<td>tub</td>
<td>mop</td>
</tr>
<tr>
<td>bug</td>
<td>sail</td>
<td>talk</td>
<td>map</td>
</tr>
</tbody>
</table>

*Word lists for each day of the week are provided by Reading In Motion

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