WordFlight

Evidence of Effectiveness

WORDFLIGHT.COM

Foundations in Learning

Evidence of Effectiveness

WordFlight is a solution designed to help students develop automatic word recognition, essential to reading fluency and comprehension. The integrated system of assessment and instruction identifies specific problems and through personalized instruction moves the student beyond acquisition to generalization and application of skills.

WordFlight has proven effective with early readers who are building their foundational reading skills and with those students who are often seen as "stuck" by educators because they lack these critical foundations. Decades of research in cognitive science and learning offer proven and effective approaches to building the automatic, expert skills required for proficient reading. The science that drives learning in many other fields has now successfully been applied to reading through WordFlight.

WordFlight has been developed, tested and refined through iterative research with students in schools. The framework has been validated with external experts at the University of Iowa. These studies, taken together, offer compelling, converging evidence for potential gains from this innovative approach to reading instruction and intervention.

Case Studies

This booklet includes several case studies[1] undertaken to test the efficacy of WordFlight in persistently struggling readers across grades, socioeconomics and geography. The measures reported were those currently in use by each district or school to assess the impact of reading instruction. The results show substantial and significant advances in key indicators of reading achievement - word recognition skills, fluency and reading comprehension.

The final study, a multiple state analysis, demonstrates consistent gains in word recognition skills for students in grades 6-10 and a significant "dose" effect which is expected from valid and effective interventions. The importance of consistent use and implementation is highlighted.

External Research Supports Underlying Learning Principles

WordFlight is unique in its use of the varied practice model as a learning model underlying its diagnostic and instruction. This was possible because the developers of WordFlight, Drs. Carolyn Brown and Jerry Zimmermann, collaborated with two cognitive scientists, Drs. Bob McMurray and Eliot Hazeltine, and reading researcher, Dr. Deborah Reed, at the University of Iowa to examine the underlying principles of learning in the context of the acquisition, application and automatic use of word recognition skills. From that collaboration, a series of studies have been funded by the National Science Foundation and the US Department of Education.

The first study confirmed the impact of variability, a key component in the WordFlight framework, for effectively teaching grapheme-phonemic correspondence (GPC) rules. The study showed conclusively that, contrary to standard practices, children form more robust and generalizable mappings for vowels when learning with words containing variable, rather than similar, consonants (Apfelbaum et al., 2013).

The team also developed and validated an innovative diagnostic to evaluate decoding knowledge and automatic word recognition in basic reading skills. The DOE-funded research identified and validated the measure of automaticity of word recognition, a precursor to fluency (Roembke, T, Hazeltine, E., Reed, D., and McMurray, 2018).

[1] *At the time of these studies WordFlight was known as Access Code.*

SOLON COMMUNITY SCHOOL DISTRICT (IA)

Case Study

Students show significant improvement in fluency after four months of WordFlight.

WordFlight was implemented in Lakeview Elementary School in Solon, IA with struggling readers in the spring of 2010.

Participants were 70 students (24 female / 46 male) ranging from Grades 2 - 7. Lakeview is a suburban/rural school in which all participating students were Caucasian except for one African American student. About 40% of the students were classified as having a disability of some type. All of the students who participated in WordFlight had been identified by their teachers and the district reading interventionist as struggling readers on the basis of district assessments and results from the Iowa Test of Basic Skills Reading Comprehension Subtest (ITBSR) which identified them as below average. The intervention was conducted from February 12, 2010 to July 15, 2010.

In order to evaluate student growth, school personnel administered the DIBELS (6th Edition) Oral Reading Fluency test each week to the participating students. Figure 1 shows that students averaged 61.1 correct words/minute before using WordFlight and averaged 81.8 correct words/minute when WordFlight ended 16 weeks later. Similar improvements were seen across grades.

Hierarchical regression analysis found significant positive impact of time for both the number of correct words/minute ($p<.0001$) and accuracy ($p<.0001$). An examination of regression slopes by week for each child showed that the number of correct words/minute increased .97 per week with positive slopes demonstrated for 58 of the 70 students ($p<.0001$). Using the Dibels benchmark standards, the 2nd graders moved from the intensive category to the strategic range and the 3rd graders moved from the intensive category to normal benchmark scores during the course of the intervention.

For a more detailed analysis of this pilot implementation, including the results of additional measures, please visit us at www.wordflight.com.

PROFILE

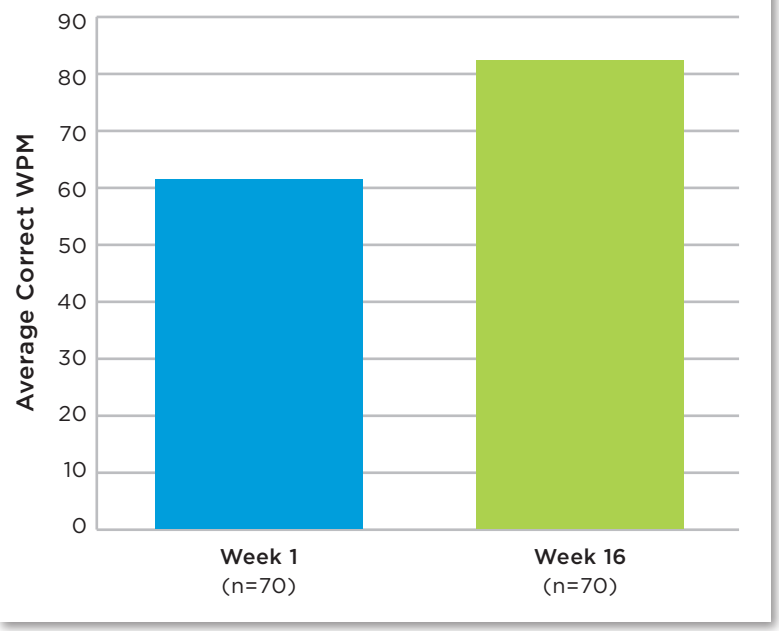
Evaluation Period: 2010

Grades: 2 - 7

Measure: DIBELS (6th edition) Oral Reading Fluency Subtest

Participants: N=70

FIGURE 1
Solon Community School District (IA)
2010



Case Study

WEST DES MOINES COMMUNITY SCHOOL DISTRICT (IA)

PROFILE

Evaluation Period: 2010

Grades: 2 – 5

Measure: DIBELS (6th edition) Nonsense Word Fluency Subtest, Reading CITBSR

Participants: N=22

Students see reading comprehension gains from WordFlight: WordFlight users improved from 45th percentile to 58th percentile on ITBS, while control group remained stagnant.

In the spring of 2010, University of Iowa and FIL researchers completed a small randomized trial of WordFlight at Hillside Elementary in the West Des Moines (IA) Community School District. This study included 22 students (15 male / 7 female) who were matched on grade and randomly assigned to receive WordFlight or Business as Usual (Control). Participants ranged from 2nd to 5th grade and were randomly assigned within grade to either WordFlight or the Control groups to ensure an equal number of participants in each grade.

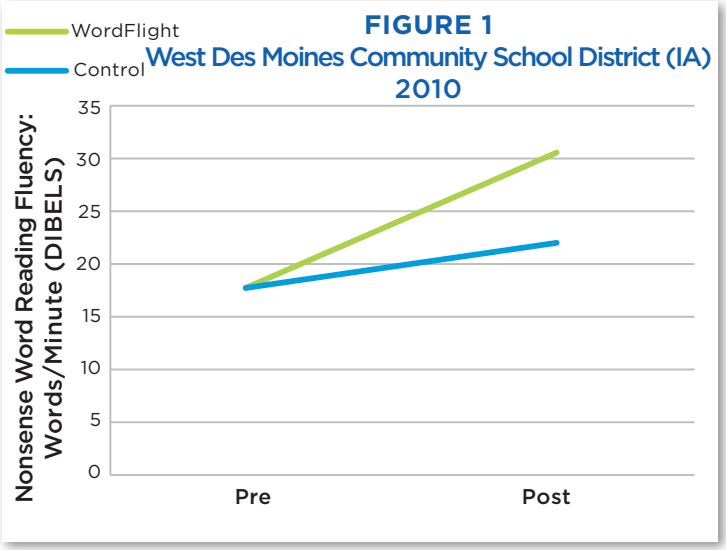


FIGURE 1
West Des Moines Community School District (IA)
2010

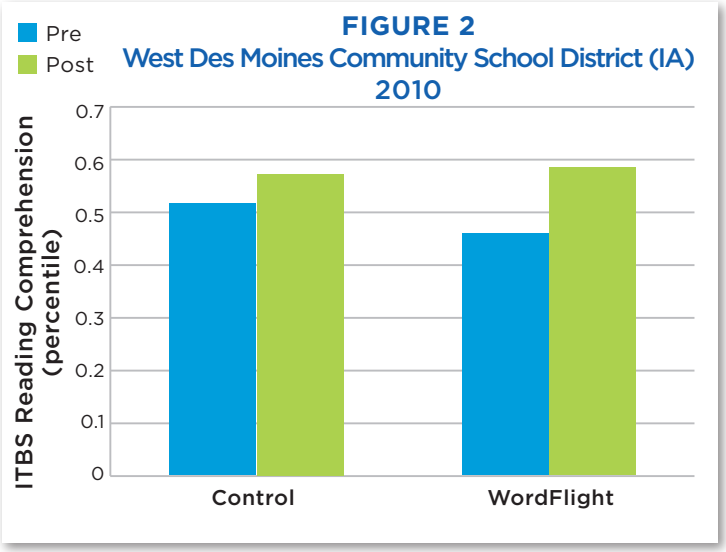


FIGURE 2
West Des Moines Community School District (IA)
2010

The WordFlight group was 64% female, 45% Caucasian, 18% African-American, and 36% Hispanic. The Control group was 73% female, 45% Caucasian, 9% African-American, and 45% Hispanic. Seven of the students were English Language Learners. Half of the participants were eligible for free-or-reduced-price-lunch. None of the students had been diagnosed as having any cognitive, language or behavioral disability at the start of the experiment; however, by the end of the experiment, three of the students in the WordFlight condition had become eligible for Special Education.

The students were pre-and post-tested using the DIBELS Nonsense Word Fluency test (number of words correctly read/minute) and the Reading Comprehension Subtest on the ITBSR. Figures 1 and 2 show the results.

Analysis of Variance showed a significant advantage for the WordFlight group over the Control group for Nonsense Word Fluency (Figure 1). The results on the ITBSR showed a significant difference for the WordFlight group who increased from the 45th percentile to the 58th percentile for reading comprehension, while there was no such difference in the Control group. A more detailed analysis of this study is available. To receive it, please visit us at www.wordflight.com.

BRIDGEPORT PUBLIC SCHOOLS (CT)

Case Study

PROFILE

Evaluation Period: 2011

Grades: 9

Measure: AIMSweb MAZE

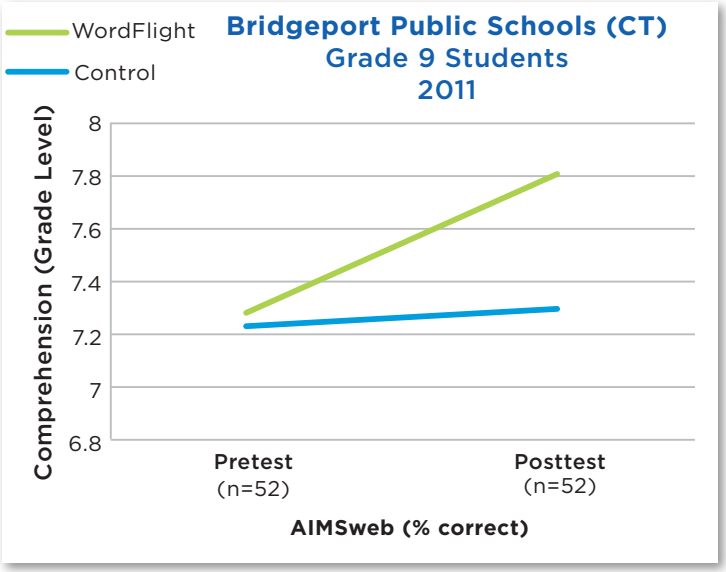
Participants: N=52

WordFlight is deployable for high school students: 9th graders in WordFlight study see .55 grade levels of improvement in comprehension after 11 weeks compared to 0.03 in control group.

A randomized trial of WordFlight was completed in the Bridgeport Public Schools (Bridgeport, CT) in the spring of 2011. The goal was to examine the use of WordFlight to help older struggling readers using a larger experimental study. This study included 52 ninth grade students at Central High School (24 WordFlight, 28 Control) who were randomly assigned to receive WordFlight or Business as Usual.

The study was comprised of 30 females (17 in WordFlight, 13 in Control) and 22 males (7 WordFlight, 15 Control). The WordFlight group was 8.3% Caucasian, 62.5% African-American, and 29% Hispanic, while the Control group was 0% Caucasian, 61% African-American, and 36% Hispanic. All students were eligible for free-or-reduced-price lunch; none of the students were English Language Learners; and none of the students had any identified learning, cognitive or language disability. The intervention was conducted from April - June, 2011. The 24 WordFlight students completed an average of 19 of the 24 instructional units.

The AIMSweb MAZE was used as a distal outcome measure of reading comprehension and was administered by the reading specialist. In this task, the student reads 150-400 word passages in which words are left blank and must be filled in by the student (selecting from three distractors). The score is based on the number of correct items the student can select in three minutes. Both scores are offered in terms of a grade level of performance.



The analysis used mixed ANOVAs with test type (pre-/post-) as within subject effects and WordFlight as a between subjects effect. The figure shows the results. While both groups started at a similar grade level (7.25 for the WordFlight group and 7.21 for the Control group), the WordFlight group gained more than half a grade level (MAC=7.8) while the Control group made no gains (MC=7.29).

This pilot demonstrated that WordFlight is deployable for high school students and appears to facilitate a significant increase in comprehension – despite its targeting more word-level decoding skills in a short-term intervention.

Case Study

LEANDER INDEPENDENT SCHOOL DISTRICT (TX)

PROFILE

Evaluation Period: 2016 - 2017

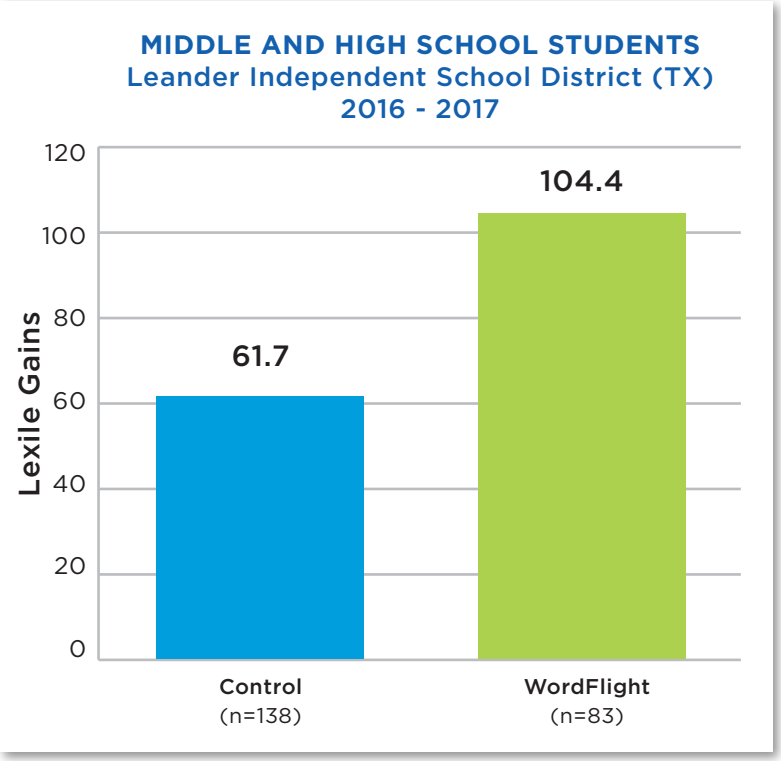
Grades: 6 - 10

Measure: Lexile Gains

Participants: N=221

Lexile levels, a measure of reading ability used to reference text comprehension, significantly improves for students who complete at least half the WordFlight curriculum.

Leander ISD, a school district in Texas, screened a large group of students for possible entry into WordFlight in the fall of 2016. Of those screened, 495 were identified as likely to benefit from completing WordFlight, either because of low scores in the screener, or because teachers recommended the student receive the intervention. The majority of these students completed Lexile assessments at least twice throughout the year – at the beginning of the year, before any intervention, and at the end of the year, post-intervention.[1] Critically, these assessments were administered independently of how many units of WordFlight a student completed, allowing us to investigate how the number of completed units impacts reading ability.



Of the 495 screened students, 83 completed more than half of WordFlight; 274 completed less than half of WordFlight; and 138 did not begin the intervention and served as a control group. The students who completed more of WordFlight had slightly lower Lexile scores at the beginning of the year (those that completed more than half: mean = 446.4; those that did not: mean = 542.7).

Those that completed more than half of the intervention showed substantially greater improvement in Lexile scores than those who did not use it; students who completed more than half showed a mean improvement of 104.4 Lexiles, substantially greater than the 61.7 Lexile improvement of the control group.

[1] Many students also completed a mid-year Lexile assessment; this score is not considered unless 1) the student did not complete an end-of-year Lexile assessment; or 2) their mid-year score was better than their end-of-year score. In this latter case, the mid-year score was used to assess Lexile gains.

MULTIPLE SCHOOL SYSTEMS (IA, MI, SD, TX)

Case Study

PROFILE

Evaluation Period: 2018 - 2019

Grades: 6–10

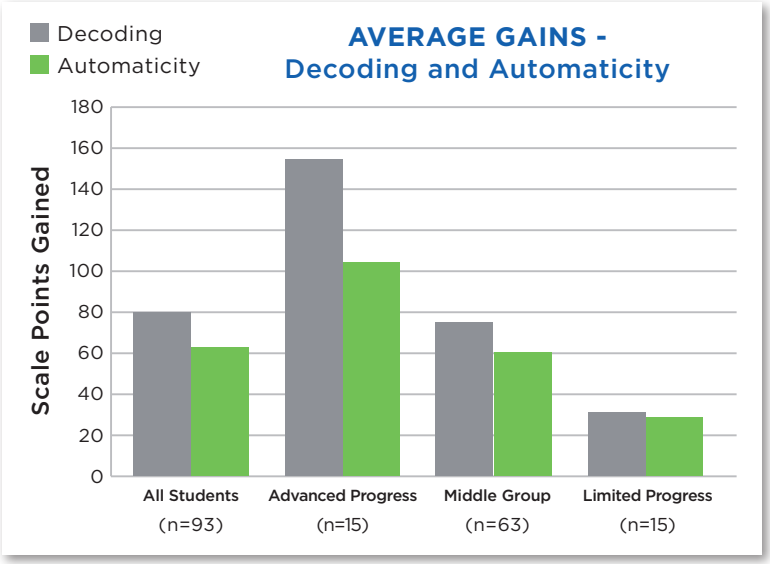
Measure: WordFlight Diagnostic

Participants: N=93

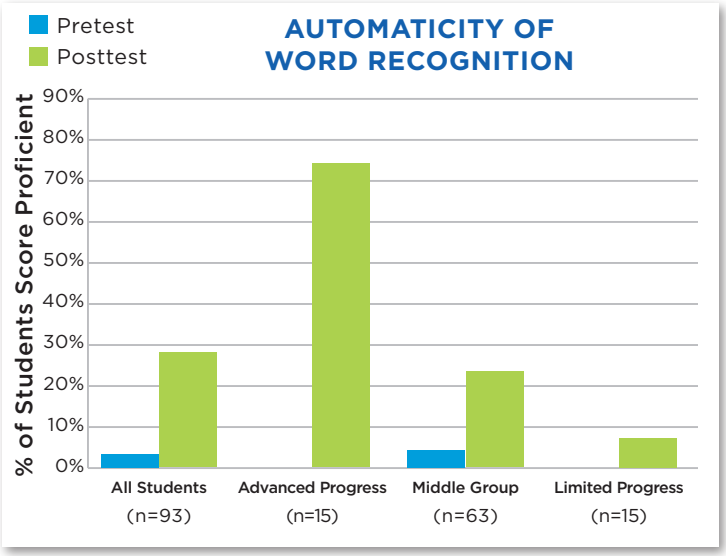
Even moderate dose levels of WordFlight move students to proficiency in automatic word recognition.

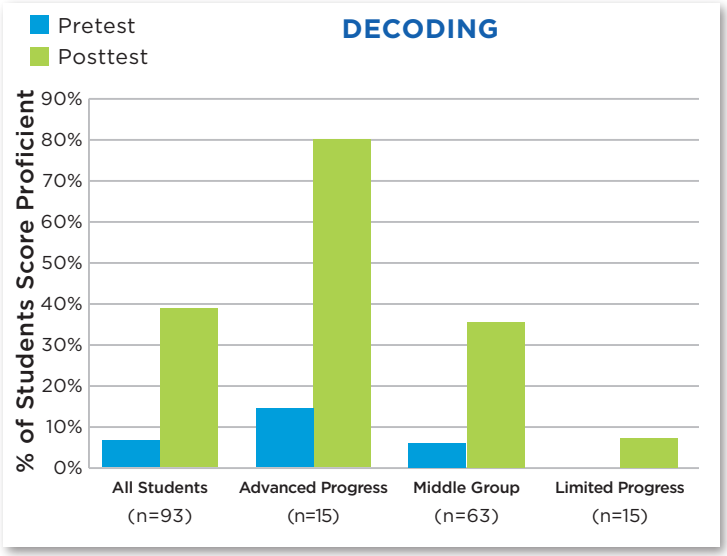
A group of 93 6th – 10th grade students representing six school systems from four states (Iowa, Michigan, South Dakota, and Texas) used WordFlight during the 2018 – 2019 school year to identify and instruct students who lacked foundational reading skills. The students were selected primarily based on their performance on the WordFlight Screener, which indicated that they were at risk in terms of proficiency of automaticity of word recognition.

The group consisted of 48 males and 45 females. Thirty students were in 6th grade, 21 in 7th, 18 in 8th, 23 in 9th, and there was a single 10th grade student. The range in usage of WordFlight was from 14 to 35 weeks and the WordFlight Diagnostic was used as the measure.



Students who completed more of the instructional program performed much better. The "Higher Dose" students (n=15) completed at least two-thirds of the intervention curriculum. Their mean gains in decoding and automaticity were 154 and 105 scale score points, respectively, which indicates minimally a category shift from high to some risk or some risk to proficiency. The "Higher Dose" group exceeded the gains for the "Moderate Dose" (n=63, completing 40% of the curriculum) of 74 points (decoding) and 61 points (automaticity). The "Limited Dose" group (n=15, completing about 17% of the curriculum) only gained 28 points in decoding and 27 in automatic word recognition. Importantly, seventy-three percent of the "Higher Dose" group achieved proficiency in automaticity, and 80% achieved proficiency in decoding, while the percentages of the other two groups achieving proficiency in both areas were substantially less.





IT'S TIME TO TRY

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