Technical Report: Fusion Reading Program

Michael F. Hock, Ph.D.
Irma F. Brasseur-Hock, Ph.D.
Donald D. Deshler, Ph.D.

March 6, 2012

The University of Kansas
Center for Research on Learning

Contact Info: ibrasser@ku.edu; mhock@ku.edu; ddeshler@ku.edu

A Short Description of Fusion Reading

The Fusion Reading Program (FRP) is a supplemental reading course (i.e., a separate class apart from core course requirements such as English, science, etc.) that is designed to meet daily for one class period. Classes consist of 12-15 adolescent struggling readers (ASRs) in grades 6-12 who score between the 5th and 30th percentile on a standard reading assessment measure. Generally, that means they are reading 2 or more years below grade level. The FRP is a highly structured course designed to teach an array of high-leverage reading strategies within a scaffolded scope and sequence of instruction, practice, feedback, and ongoing assessments for progress monitoring. A major goal of FRP is to increase student motivation, engagement, and reading outcomes. Reading instruction in the FRP is built upon the two primary components of the Simple View of Reading (Hoover & Gough, 1990): *word recognition* (consisting of instructional components designed to teach ASRs advanced phonics, decoding, word recognition, and fluency skills and strategies) and *linguistic comprehension* (consisting of instructional components designed to enhance ASRs skills in making predictions, summarizing text elements, building a strong vocabulary, and using high leverage reading strategies in taking standardized examinations (e.g., state AYP assessments). Importantly for practitioners, FRP is a fully developed instructional package. All FRP materials (seven teacher manuals and three student workbooks) have been produced and are "off the shelf" ready for full-scale implementation. The FRP Curriculum can best be understood by considering: (1) its scope and sequence, (2) its assessment system, (3) the instructional methodology, and (4) lesson format and daily structures. Each will be described in the following paragraphs.

The FRP Curriculum

Scope and sequence. Because the achievement gap that must be closed for ASRs is so large, any instructional materials or programs used with these students must be sound from both a curricular and pedagogical standpoint. The FRP was designed with these realities in mind. Additionally, this program was designed with considerable input from field practitioners to ensure that it would be feasible to implement in classroom settings. A key element of the FRP's design is the scope and sequence of the various curriculum elements (See Figure 1). The following paragraphs describe in detail: the structure of the course, how students are introduced to the course, and the sequence and integration of the course components.

To launch the course, teachers use the *Establish the Course* unit (Hock, Brasseur-Hock-Hock, & Deshler, 2005) to provide students with rationales for the course, an overview of course content, and expectations for classroom management procedures that support a positive learning environment. Additionally, students learn procedures for acquiring essential vocabulary from context, how to participate in Thinking Reading activities, daily warm ups, out-of-class extended reading through Book Study, and procedures for summative, progress, and formative assessment.

During the first day of class, students are introduced to *Thinking Reading*. This instructional routine engages students in oral reading and discussion of highly engaging text (both expository and narrative text). Initially, the teacher leads this activity by reading aloud and modeling expert reader cognitive and metacognitive strategies. As part of this process, the teacher engages students in conversations about how to effectively navigate various text demands. The cognitive strategies are designed to enable students to effectively respond to word-level *and* reading comprehension demands. For example, the teacher might model a strategy for identifying unfamiliar multisyllabic words within the selection being read. The teacher thinks aloud about what she does before, during, and after reading and **implicitly** demonstrates advanced phonics, decoding, word recognition, and fluency skills found in the Bridging Strategy. The teacher would also model other reading strategies for making predictions, learning unfamiliar vocabulary, or connecting prior knowledge to current text. Eventually during Thinking Reading, students take more responsibility for reading and asking questions as they read the selection. Reading strategies that are **explicitly** taught during another instructional segment of the class are also talked about and applied to the reading selection during Thinking Reading. Thus, strategies are taught and applied within the immediate context of highly engaging text in a fashion similar to that found in Reciprocal Teaching (Palincsar & Brown, 1984).

Also during *Establish the Course*, students learn the Vocabulary Strategy (Brasseur-Hock, Hock, & Deshler, 2006). This seven-step process includes group, partner and individual analysis, discussion and application of context-based vocabulary words. Students learn how to determine the meaning of unknown vocabulary through the analysis of affixes and context clues. Student learning and application occurs through extensive classroom discussion regarding multiple word meanings, word usage in a variety of contexts, and similarities of the target word to other words.

The second instructional unit in the FRP is *The Prediction Strategy* (TPS) (Hock, Brasseur-Hock, & Deshler, 2005). This strategy includes several sub strategies that help students learn how to preview reading selections, link prior knowledge to the subject, make predictions and inferences about content, and evaluate the reading to answer student generated questions and predictions.

Possible Selves for Readers (Hock, Brasseur-Hock, & Deshler, 2005)*,* the third instructional unit, is designed to surface individual student long-term goals for the future and establish action plans that directly link instruction in the FRP to the personal, learner, and career goals expressed by students. Possible Selves for Readers directly links the attainment of personal goals to reading proficiency. Again, while students participate in Possible Selves for Readers, they read literature during Thinking Reading in which the hopes and fears for the future of the main characters are highlighted.

The fourth instructional unit in the FRP is *The Bridging Strategy* (TBS) (Brasseur-Hock, Hock, & Deshler, 2006). TBS includes instruction in advanced phonics, decoding, word recognition, and reading fluency. Advanced phonics and decoding instruction has been designed so that high school students will participate in the activities and not find them elementary or far removed from the reading process. For example, the review of sounds is presented through the analogy of a warm-up or stretching type activity that athletes or musicians do prior to beginning a performance. In this fashion, students learn and apply a variety of basic word-level skills in short, structured activities as they prepare to engage in reading activities.

Once students master the Prediction, Vocabulary and Bridging strategies, they learn how to integrate all of these strategies during the process found in *Strategy Integration* (Brasseur-Hock, Hock, & Deshler, 2006), the fifth instructional unit in Fusion Reading. The main outcome during Strategy Integration is that students fluently use multiple strategies acquired during the course while reading and discussing content class material. Students engage in Strategy Integration after each new major strategy is learned so that the reading process supports the transition from *learning reading strategies to reading strategically*. When students read strategically, in a fashion similar to expert readers, they personalize strategies and use them in a manner that is responsive to the unique demands of diverse content areas. They don't typically think in terms of strategy steps but focus on having a conversation with text and authors. Strategy Integration is an extensive unit that lasts about 8 to 10 weeks and is taught two to three times during the course.

The sixth instructional unit in the FRP is the *Summarization Strategy* (TSS) (Hock, Brasseur-Hock, & Deshler, 2005), which includes strategies for generating questions about the topic, finding main ideas and important details, paraphrasing, and summarization of larger sections of text. Once TSS has been mastered, it is applied in another Strategy Integration unit. By now students are applying, predicting, questioning, paraphrasing, summarizing, analyzing unknown vocabulary, and all the word-level skills found in TBS to narrative and expository text directly related to content course materials that are specific to individual schools.

The final unit in the FRP is the *Pass Strategy* (Hock, Brasseur-Hock, & Deshler, 2006). In this unit, the primary outcome is that students apply the reading strategies they have mastered to reading passages from the state reading assessment. For example, students in Florida will learn how to make predictions, draw inferences, paraphrase, summarize, and generate questions using released items from the FCAT. Students would learn how to use all the reading strategies they have learned and practiced in multiple Strategy Integration units to pass the state measure. Students also learn how to efficiently and effectively take standardized measures of reading achievement.

The instruction described above is designed to follow a logical progression that engages disengaged students in the reading process. It addresses the need for orderly, well-managed instructional conditions, and builds acquisition of reading skills in a sequence that recognizes the need for simultaneous instruction in word level and comprehension skills and strategies as suggested in the Simple View of Reading (Gough & Tunmer, 1986; Hoover & Gough, 1990).

Assessment system. The overarching goal of FRP is to improve the reading comprehension of ASRs. In order to support that goal, an assessment system has been embedded in the overall course, each instructional unit, and daily instruction of skills and strategies. In the FRP, assessment informs instruction and is designed to provide teachers and students with regular feedback on student performance so individual student needs are identified and addressed. Accurate assessment allows teachers to differentiate instruction and significantly accelerate reading growth.

Assessment is addressed in the FRP in each of the daily lesson plans, and all of the necessary assessment probes and materials are provided for teachers. The different goals and purposes of the FRP assessment system are: *(1) To determine the extent to which the FRP is successful in helping all students meet or exceed grade level standards by the end of the year.* At the state, district, and school level, educators need to know at the end of

each year how many students at each grade level can meet the state-level literacy standards. They also need to know whether the number of students who can achieve at the highest levels is improving from year to year, and whether the number of students at the lowest levels is declining. *(2) To monitor the progress of FRP students during the academic year in acquiring the knowledge and skills required to meet and exceed current grade-level standards in reading.* Teachers need periodic assessments during the year. Such assessments tell them which students are making adequate progress toward meeting grade-level standards so they can make adjustments and allocate resources while there is still time to help students in need. In addition, classroom teachers need frequent assessments to help both themselves and their students understand the "next steps" required to improve their literacy skills. Each instructional unit in the FPR has progress or benchmark assessments built into the lessons including guidelines for administering the assessment, scoring procedures, and providing feedback to students. *(3) To provide information helpful in monitoring the effectiveness of daily instruction in the FRP so that instruction can be responsive to student learning and mastery of skills and strategies.* The FRP has formative assessments to monitor students' progress in acquiring the targeted reading skills. These formative assessments are given daily and shared with students immediately.

Instructional methodology. Explicit instruction is one of the core features of the FRP. While some measure of implicitness is found in the FRP, explicit mastery instruction dominates the FRP and is used to teach individual skills and strategies. For each strategy in the curriculum, teachers describe the strategy being learned, discuss the potential benefits and rationale for using it, and then explain and model specific cognitive and metacognitive steps of the strategy. Students verbally practice the steps of the strategy, and then practice using the strategy with materials written at their instructional reading level. They receive elaborated feedback from the teacher as they become proficient in the use of the strategy. Next, they practice using the strategy with more and more difficult materials until they attain proficiency with materials written at or close to their grade level. Once they are proficient with the strategy, they begin to use the strategy in a generative way; that is, they apply the strategy to assignments in a wide variety of materials and settings. For example, they may apply the strategy to short stories or reading selections similar to what they will encounter in the district's language arts classes. Further, as each strategy is taught, it is directly linked to the highly engaging literature in Thinking Reading. For example, when students learn classroom procedures and expectations, they read *Coach Carter* and discuss expectations for success, the need for discipline and commitment, the value of teamwork, and the relationship of effort to success found in the novel. If they are learning a reading strategy, they see the strategy applied to text during Thinking Reading so that reading strategies are not taught out of the context of real world reading tasks. As instruction progresses, reading material becomes more rigorous moving from novels like *Coach Carter* to novels and short stories like *White Fang* and *The Most Dangerous Game*. Our foundational research has shown that 98% of all the low-achieving adolescents who have been taught learning strategies in this way have mastered them if the instructional procedure described here is followed carefully (Ellis, Deshler, Lenz, Schumaker, & Clark, 1991; Schumaker & Deshler, 1994).

Daily lesson format. A standard but flexible lesson format has been developed to support intensity of instruction and the use of multiple instructional activities that include

whole class explicit instruction, guided practice, partner practice, and teacher-led individualized instruction. The format provided in the FRP responds to both 90-minute block schedules and 60-minute class schedules that we have found to be common in secondary schools. Hence, daily lessons have been written for both 60- and 90-minute schedules and both are included in the FRP curriculum manuals. The 90-minute block schedule version is described below, as this structure is more common in the high schools that will participate in the study.

First, each instructional class begins with 5 minutes of structured ***Warm-Up*** activities tied directly to vocabulary discovery (exploration) or Thinking Reading. Students complete warm ups as the teacher takes role and provides immediate feedback on student performance during this activity. Second, the whole class participates in a 20-minute ***Thinking Reading*** activity. Thinking Reading is a whole class read-along activity in which engaging literature is read by the teacher and students. The goal of Thinking Reading is to get disengaged readers to place "eyes on the page" (Vaughn, 2006). Third, students engage in ***Explicit Strategy Instruction*** in the reading skills and strategies that make up the FRP. They participate in explicit instruction for about 40 minutes of each 90-minute instructional period. During explicit instruction, the teacher *explains strategies*, *provides expert models*, and *guides student practice* toward mastery of the targeted strategy. Next, students spend 20 minutes learning ***Vocabulary*** words situated in context. Teachers and students have rich discussions about unknown vocabulary found in the passages they are reading and use the Vocabulary Strategy to learn the words. Finally, students participate in a ***Wrap–Up*** activity where the work of the day is summarized, tomorrow's lesson is forecasted, and progress and goal charts are updated by each of the students. Schools that use 45-minute class schedules follow the same general structure described above but adjust the timeframe.

Individual lesson plans, model scripts, teacher & student materials. Each of the instructional units described above has extensive lesson plans, model or example scripts, and all of the teacher and student materials needed to teach a lesson. First, for each lesson, teachers are provided a one-page overview, which includes learning objectives and a lesson-at-a-glance chart. The chart includes the lesson format, approximate time needed for each activity, a short description of the activities for the lesson, and the required materials. Second, each lesson is presented with an example script that adds detail to the overview initially presented. In a step-by-step process with both written and visual cues, teachers have a model of what the lesson should look like when taught with a high level of fidelity. While complete, these example lessons and activities are usually only 2 to 3 pages long. Finally, all the teacher and student materials necessary to teach the lesson are included within each lesson so that teachers do not need to search for them. The teacher and student materials include such items as strategy cue cards, reading passages, formative assessment score sheets and feedback forms, and progress graphs and charts.

Empirical Support for Individual Reading Components. The individual strategies that will be included in our reading program focus on teaching students to comprehend written text by (a) paraphrasing, (b) summarizing, (c) clarifying, (d) predicting, (e) recognizing complex words, (f) increasing reading fluency, and (g) learning new vocabulary. The research base on the efficacy of these strategies is considerable (Deshler & Schumaker, 1986, Deshler & Lenz, 1989; Fisher, Schumaker, & Deshler, 2002; Peterson, Caverly, Nicholson, O'Neal, & Cusenbary, 2000; Schumaker & Deshler, 1992; Swanson & Deshler, 2003; Swanson & Hoskyn, 1998). More than 20 research studies have been completed (e.g., see Schumaker & Deshler, 1992; Schumaker & Deshler, 2006 for reviews). Documented effect sizes have ranged from .6 (Lenz & Hughes, 1990) to 1.8 (Bulgren, Hock, Schumaker, & Deshler, 1995) for word identification, paraphrasing, visualization, and self-questioning strategies. Indeed, the use of learning strategies by low achievers has been shown to boost their performance to levels comparable to those of normally achieving peers (Schumaker & Deshler, 1992; Schumaker & Deshler, 2006; Schumaker & Woodruff, 2005; Swanson, 1999; Swanson & Deshler, 2003). While individually effective, the strategies in these studies have not been packaged into a comprehensive middle school special education supplemental class intervention.

Empirical Support for Instructional Practices. Previous research also supports the specific instructional principles that will be included in our reading program. Among these principles are: (a) direct or explicit instruction, (b) student engagement, (c) transactional strategy instruction (metacognition), (d) elaborated feedback, (e) multiple controlled and independent practice opportunities, (f) teacher modeling, (g) scaffolded support, and (h) and the use of small interactive learning groups (Dole, Duffy, Roehler, & Pearson, 1991; Edmonds et al., 2009; Gersten, Fuchs, Williams, & Baker, 2001; Scammacca et al., 2007; Swanson & Hoskyn, 1999; Torgesen et al., 2006).

Research has also found that teaching strategies for reading, writing, and remembering important information is effective for adolescents with learning disabilities (Gersten et al., 2001; Swanson, 1999a; Swanson & Hoskyn, 1998; Swanson & Sachse-Lee, 2000; Vaughn, Gersten, & Chard, 2000). These strategies include the cognitive processes efficient readers employ when they read narrative and expository text and the metacognitive and self-regulatory strategies used when they select, monitor, and evaluate their understanding of text (Deshler & Schumaker, 1988; Gersten et al., 2001; Swanson, 1999; Swanson and Hoskyn, 1998; Torgesen et al., 2007; Vaughn et al., 2000). Thus, teaching strategies for learning how to learn and how to comprehend text will be central to the program we develop.

When teaching skills and strategies to students with disabilities, instruction should be explicit (Edmonds et al., 2009; Gersten et al., 2001; Scammacca et al., 2007; Swanson, 1999b; Swanson & Hoskyn, 1998; Swanson & Sachse-Lee, 2000; Vaughn, et al., 2000). Explicit instruction is characterized by a clear explanation of specific skills and

strategies, supported by expert models of the skills or strategies with tasks familiar to students, extensive practice of skills and strategies in context with scaffolded support, and is effective in guided, partner, and independent structures (Edmonds et al., 2009; Scammacca et al., 2007; Swanson & Hoskyn, 1998; Torgesen, 2005). In addition, practice is greatly enhanced when students are provided with positive, corrective, elaborated feedback (Kline, Deshler, & Schumaker, 1992). Thus, explicit instruction, multiple practice opportunities, and elaborated feedback will be key instructional practices of the program we develop.

Research Supporting the Intervention. As a part of an IES grant, a random assignment study was conducted to bolster claims of promise for FR. The control condition was *Second Chance Reading* (SCR) (Showers, Scanlon, & Schnaubelt, 1998). Students in the experimental condition received instruction in FR. At the end of instruction for the final iteration, all students were administered the Group Reading and Diagnostic Evaluation (GRADE) (Williams, 2001), a standardized measure of reading proficiency. The University of Houston's TIMES Center, under the direction of Dr. Paras Mehta, conducted an independent analysis of the data.

Thirty-four students received FR and 35 students received instruction in SCR. The data were analyzed using a hierarchical linear modeling (HLM) approach as implemented in SAS PROC MIXED. The dependent variables were the standard and raw scores on the GRADE comprehension composite and the GRADE Total test score. The students had three possible measurement occasions: pre, mid-year, and post. A significant interaction was found between treatment and measurement occasion for the standard score on the GRADE Composite comprehension score, $F(2, 88) =3.53$, p=.03, indicating that there were differences between the experimental and control groups over the three time points. The GRADE composite score is a measure of sentence and passage comprehension. Follow up analyses with the LSMEANS option estimated that the post-standard score means for the two groups were: Experimental, 91.1 and Control, 86.9. This represented an estimated increase for the experimental group of 5.05 standard score units compared an estimated loss of -.8 standard score units for the control group. The pre to post gain for the experimental group was statistically significant, $F(2,88)=4.59$, p=.01. The effect size (Hedges' d) for this subtest score is raw score $=ES$ .70 $(F2,93)=3.06$; Prob=.05) and ES .66 $(F2,93)=3.73$; Prob=.03) for standard scores. This is a moderate to large effect, especially given that the overall effect size gain on the GRADE norming sample was .07 on total test score (Williams, 2001) and that 9th grade students typically make effect size gains on standardized reading measures of .19 (Bloom, Hill, Black, & Lipsey, 2007).

On the GRADE Total standard score (vocabulary, passage comprehension, sentence comprehension), the results for the interaction effect were not statistically significant, but the probability for the interaction was relatively small, $F(2,86) = 1.79$, p=.17. The effect sizes for the GRADE Total were moderate: .55 for raw scores and .45 for the standard scores. Given that the desired outcome data for a Goal 2 Study is to show promise and that the intervention was tested against another intervention institutionalized in the district, we believe that proof of promise was demonstrated for the high school program in this study.

Additional studies on FR have been conducted at the high school level in Florida and Iowa. In a Palm Beach County, Florida study, participants included 23 teachers and 438 struggling adolescent readers students from two middle schools and two high schools. This was the first time FR was used with middle school students, and teachers noted the need for major revision in pacing, vocabulary, and sequence of units.

In this experimental study, students were randomly assigned to either FR or Read 180 classrooms. In an independent (University of Central Florida) HLM analysis of the study's first six-month impact (2007-2008), students who learned FR increased their reading scores on the Florida Comprehensive Assessment Test (FCAT) by an average of 143 points (Little & Hahs-Vaughn, in press). This increase represented a growth rate on the FCAT that was more than twice the growth rate for these students in prior years. Unfortunately, due to a state funding crisis, the study was terminated at the end of its first year and the second year of the intervention was not formally evaluated. Thus, valid comparisons between interventions could not be made. However, both intervention groups made significant gains and there was no statistically significant difference between Read 180 and Fusion Reading students on the outcome measures. District administrators, teachers, and the independent evaluator concluded that FR was a promising practice for struggling adolescent readers, including those with ELL status, and the district continued to implement the curriculum the following year without state support. Additional studies on FR have been conducted at the high school level in Florida and Iowa.

In Iowa, a general education language arts teacher and a special education teacher teamed to provide FR to a group of 10 special education students in Grades 10 and 11. These students were reading at the 2.5 grade level to the 5.7 grade level at the beginning of instruction in FR. A pre/post test design has been used for this study, using the GRADE as the measure. At the end of Year 1, a paired-samples t-test was conducted to compare the difference in Total Test pre/post scores on the GRADE. The results indicated that the mean score for the post test (M=54.67, SD=15.330) was significantly greater than the mean score for the pretest (M=40.22, SD=13.700), t(9)= 7.296, p <.000. The standardized effect size index, d, ranged from .68 to 1.20 on all subtests of the GRADE.

In another study in Iowa, implementation field studies using FR were conducted with middle school students with disabilities. The focus of this state-funded field study was to improve reading outcomes for students with IEPs and reading goals. Participants in this study included special education teachers and 40 sixth-grade students from three middle schools. All of the students had active IEPs with reading goals. In this study, a quasi-experimental matched group design was used. Students in the experimental group (n= 20) received FR; students in the comparison group (n= 20) received Corrective Reading. The standardized reading measure was the GRADE. At the end of the first year, the difference in GRADE Total Test reading score was statistically significant. An independent-samples t-test was conducted to compare the difference in Total Test scores. The results indicated that the mean score for the experimental group post test (M=33.60, SD=10.29) was significantly greater than the mean score for the comparison group post test (M=21.70, SD=7.31), t (38)= 4.216, p <.000). The standardized effect size index, Cohen's d, was very large, 1.35.

A study in Holland, Michigan found positive results for Fusion Reading. Holland was originally a participant in a Striving Readers random assignment experiment but decided they would not withhold the Fusion Reading intervention from half of their struggling readers. They withdrew from the RA study, used Fusion Reading as the district-wide intervention, and proceeded to evaluate the effects of Fusion independently of the Striving Readers study. In this study, 6th and 7th graders from four K-7 schools participated in a pre/posttest design study. Seventy-five percent of the participants were eligible for free or reduced lunch, 41 % were Latino, 10% African-American, 45 % were white and 4% reported as being from other groups. Five teachers taught the program to about 134 students. One of the measures used to evaluate the effects of Fusion was the Test of Silent Contextual Reading Fluency (TOSCRF) (Hammill, Weiderholt, & Allen, 2006). The TOSCRF has been found to correlate with the Gray Oral Reading Test, the Stanford Reading Test, and the Woodcock-Johnson Broad Reading Score.

A paired-samples t-test analysis of the pre/posttest data showed that students made significant gains in reading scores at the $p < .000$ level. The effect size (Cohen's d) for the gain was ES= 1.59, a very large effect. Overall, students made average gains of 2.4 years after one year of instruction. Subgroups made similar gains (6th graders, 7th graders, students with disabilities, male, females). English language learners made gains of 1.4 years.

Finally, a study was conducted in rural New York with the Genesee Valley BOCES, a regional consortium of rural schools serving special education students. Forty-nine students and 18 teachers participated in the study. Students enrolled in Fusion Reading were identified by their districts as students not meeting the state standard for reading in their grade level. Participants included students with IEPs and reading goals. Results of a paired samples t-test of the GRADE reading total test score showed that students made statistically significant gains from pre to posttest ($p < .000$ level) and the magnitude of the gains were moderate. The effect size (Cohen's d) was .60. Students averaged grade level gains of 2 years, moving from a mean grade level score of 4.4 GL to 6.6 GL after one year of instruction.

An interesting finding in this study was related to a question about dosage. Twenty-five of the students received the intervention for less time than was recommended by the developers due to individual school schedules, availability of teachers, or school-specific guidelines about time allotments for supplemental classes. This group of students received Fusion Reading on average 3 days a week for about 22 minutes a day. This dosage was below the recommended 250 to 300 minutes a week. Another group of 24 students received Fusion Reading for on average of 50 minutes a day five times a week or 80 minutes a day every other day. This group received the intervention about 240 to 250 minutes a week. Results for the lower dosage group were surprising. The low dosage group did make statistically significant gains ($p < .000$ level) with a medium effect size of .54 (Cohen's d). The high dosage group also made statistically significant gains (.000) but with a large effect size (.73). Given the data from the multiple studies discussed above, a large effect size for students receiving the recommended dosage is consistent with those studies. That students receiving low dosage intervention made statistically significant gains with moderate effect size gains, is encouraging.

Fusion Reading: Descriptions of Program Components

I. <u>Publications</u>

<u>Books/Manuals</u>
Brasseur, I.F., Hock, M.F., Deshler, D.D. (2007). Fusion Reading: Establish the Course. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: Establish the Course. The ETC manual is a reference tool that provides an overview of the Fusion Reading Course, the daily lesson plans, expanded descriptions and models of the key instructional component found in the daily instruction structure such as classroom procedures, daily warm-ups, and program assessment.

Hock, M.F., Brasseur, I.F., Deshler, D.D. (2007). The PASS the Test Strategy. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: The PASS Strategy. The PS is a strategy designed to teach students how to approach, think about, and apply critical reading strategies while taking standardized assessments. The two primary outcomes for this strategy are: 1) for students to become effective and efficient standardized test-takers, and 2) for students to be able to apply the reading strategies they have learned to the reading material they encounter on tests.

Brasseur, I.F., Hock, M.F., Deshler, D.D. (2007). The Book Study Program. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: Book Study. The book study program is designed to extend student application and engagement of the reading process. Book study scaffolds the application of Fusion Reading strategies and provides optional assignments to complete on student selected reading material. The students complete the book study assignments outside of the classroom as homework.

Hock, M.F., Brasseur, I.F., Deshler, D.D. (2007). Fusion Strategy Integration. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: Strategy Integration. The SI program teaches students to think about, select, and *apply* strategies appropriate to reading material found in core content classes. In SI, students are taught to apply strategies they have learned in a flexible manner by having a conversation with the text. SI includes monitoring forms and progress measures.

Brasseur, I.F., Hock, M.F., Deshler, D.D. (2007). The Bridging Strategy-revised. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: The Bridging Strategy. The Bridging Strategy manual is a major revision of the old Bridging strategy and now includes advance phonics, decoding, word identification/recognition, and fluency. The TBS was completely restructured from the Adolescent Literacy version given the response of the validation studies conducted in KCK, Alameda, CA, and Palm Beach County School District, FL.

Hock, M.F., Brasseur, I. F. & Deshler, D.D. (2007). The Prediction Strategy-revised. Lawrence, KS: The University of Kansas Center for Research on Learning.

Fusion: The Prediction Strategy. TPS is a major revision of the original version of the strategy and is designed to be part of a two-year high school reading curriculum. The PS teaches student to look for clues before reading, link clues to prior knowledge, and make predictions before reading a passage. Then student reflect on the accuracy of their prediction and make new predictions. TPS is a context-based focus in which the strategy taught in the context of engaging literature. The PS was restructured to incorporate progress monitoring and an assessment measure.

Brasseur, I. F., Hock, M.F., & Deshler, D.D. (2007). The Summarization Strategy-revised. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: The Summarization Strategy. TSS is a strategy designed to be part of a two-year high school reading curriculum. The TSS teaches student to look for clues before reading, paraphrase, and summarize sections of reading material. The SS was restructured to incorporate progress monitoring and an assessment measure.

Brasseur, I. F. & Hock, M.F., (2007). The Thinking Reading Program-revised. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: Thinking Reading. TR was formally known as Guided Reading. TR is embedded within the Fusion reading daily curriculum and also can be a stand-alone program. Thinking reading has 4 main purposes: (a) Forecast, application, and integration of reading strategies, (b) expert reading model by the teacher (c) student practice and application of learned strategies, and (d) engagement of students in the reading process.

Hock, M.F., Brasseur, I. F. & Deshler, D.D. (2007). The Vocabulary Program. Lawrence, KS: The University of Kansas Center for Research on Learning.
Fusion: Vocabulary. Vocabulary is embedded within all the Fusion reading strategies and also can be a stand-alone program. The vocabulary program uses extensive reading and classroom discussion of vocabulary with multiple examples of new words learned in the context of the student's lives. Students also learn how to use context to expand their knowledge of new vocabulary.

Student Anthologies: Multiple anthologies of short readings (Jamestown Timed Reading Plus 400 word passages) in expository text covering various content areas have been created and are used when strategies are learned. Each anthology has lexiled passages and comprehension questions. The anthologies are used as students learn each of the main reading strategies that anchor the program, and they are used to extend the quantity and nature of reading materials used in the program.

References

Bloom, H., Hill, C., Black, A.R., & Lipsey, M. (2007). *Using empirical benchmarks for interpreting effect size*. Paper presented at the Application of Effect Sizes in Research on Children and Families: Understanding Impacts on Academic Emotional, Behavioral, and Economic Outcomes, Washington, DC.

Brasseur, I., Hock, M., & Deshler, D. (2006a). The bridging strategy. Lawrence: University of Kansas Center for Research on Learning.

Brasseur, I., Hock, M., & Deshler, D. (2006b). Strategy integration. Lawrence: University of Kansas Center for Research on Learning.

Brasseur, I., Hock, M., & Deshler, D. (2006c). The vocabulary strategy. Lawrence: University of Kansas Center for Research on Learning.

Bulgren, J.A., Hock, M.F., Schumaker, J.B., & Deshler, D.D. (1995). The effects of instruction in a paired associates strategy on the information mastery performance of students with learning disabilities. *Learning Disabilities Research & Practice, 10*(1), 22-37.

Deshler, D.D., & Lenz, B.K. (1989). The strategies instructional approach. *International Journal of Disability, Development and Education, 36*(3), 203-224. doi: 10.1080/0156655893603004

Deshler, D.D., & Schumaker, J.B. (1986). Learning strategies: An instructional alternative for low-achieving adolescents. *Exceptional Children, 52*(6), 583-590.

Deshler, D.D., & Schumaker, J.B. (1988). An instructional model for teaching students how to learn. In J.L. Graden, J.E. Zins & M.J. Curtis (Eds.), *Alternative educational delivery systems: Enhancing instructional options for all students* (pp. 391-411). Washington: National Association of School Psychologists.

Deshler, D.D., & Schumaker, J.B. (Eds.). (2006). *Teaching adolescents with disabilities: Accessing the general education curriculum*. Thousand Oaks: Corwin Press.

Dole, J.A., Duffy, G.G., Roehler, L.R., & Pearson, P.D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research, 61*(2), 239-264. doi: 10.2307/1170536

Edmonds, M.S., Vaughn, S., Wexler, J., Reutebuch, C., Cable, A., Tackett, K.K., & Schnakenberg, J.W. (2009). A synthesis of reading interventions and effects on reading comprehension outcomes for older struggling readers. *Review of Educational Research, 79*(1), 262-300. doi: 10.3102/0034654308325998

Ellis, E.S., Deshler, D.D., Lenz, B.K., Schumaker, J.B., & Clark, F.L. (1991). An instructional model for teaching learning strategies. *Focus on Exceptional Children, 23*(6), 1-24.

Fisher, J.B., Schumaker, J.B., & Deshler, D.D. . (2002). Improving the reading comprehension of at-risk adolescents. In C.C. Block & M. Pressley (Eds.), *Comprehension instruction: Research-based best practices* (pp. 351-364). New York: Guilford Press.

Gersten, R., Fuchs, L.S., Williams, J.P., & Baker, S. (2001). Teaching reading comprehension strategies to students with learning disabilities: A review of research. *Review of Educational Research, 71*(2), 279-320. doi: 10.3102/00346543071002279

Gough, P.B., & Tunmer, W.E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7*(1), 6-10.

Hammill, D.D., Wiederholt, J.L., & Allen, E.A. (2006). *TOSCRF: Test of silent contextual reading fluency*. Austin: Pro-Ed.

Hock, M.F., Brasseur, I., & Deshler, D. (2005a). Establish the course. Lawrence: University of Kansas Center for Research on Learning.

Hock, M.F., Brasseur, I., & Deshler, D. (2005b). Possible selves. Lawrence: University of Kansas Center for Research on Learning.

Hock, M.F., Brasseur, I., & Deshler, D. (2005c). The summarization strategy. Lawrence: University of Kansas Center for Research on Learning.

Hock, M.F., Brasseur, I., & Deshler, D. (2006). The pass the test strategy. Lawrence: University of Kansas Center for Research on Learning.

Hock, M.F., Deshler, D.D., & Brasseur, I. (2005). The prediction strategy. Lawrence: University of Kansas Center for Research on Learning.

Hoover, W.A., & Gough, P.B. (1990). The simple view of reading. *Reading and Writing: An Interdisciplinary Journal, 2*(2), 127-160.

Kame'enu, E.J., Fuchs, L., Francis, D.J., Good, R.O., Connor, R.E., Simmons, D.C., . . . Torgesen, J.K. (2006). The adequacy of tools for assessing reading competence: A framework and review. *Educational Researcher, 35*(4), 3-11. doi: 10.3102/0013189X035004003

Kline, F.M., Deshler, D.D., & Schumaker, J.B. (1992). Implementing learning strategy instruction in class settings: A research perspective. In M. Pressley, K. Harris & J. Guthrie (Eds.), *Promoting academic competence and literacy in school* (pp. 361-406). San Diego: Academic Press.

Lenz, B.K., & Hughes, C.A. (1990). A word identification strategy for adolescents with learning disabilities. *Journal of Learning Disabilities, 23*(3), 149-158, 163. doi: 10.1177/002221949002300304

Little, M. E. & Hahs-Vaughn, D. L., (in press). Reading intervention research in secondary schools: Results of comprehensive scale-up implementation. *Reading Intervention Research.*

Palincsar, A.S., & Brown, A.L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction, 1*(2), 117-175. doi: 10.1207/s1532690xci0102_1

Peterson, C.L., Caverly, D.C., Nicholson, S.A., O'Neal, S., & Cusenbary, S. (2000). *Building reading proficiency at the secondary school level: A guide to resources*. Austin: Southwest Texas State University Southwest Educational Development Laboratory (SEDL).

Scammacca, N., Roberts, G., Vaughn, S., Edmonds, M., Wexler, J., Reutebuch, C.K., & Torgesen, J.K. (2007). *Interventions for adolescent struggling readers: A meta-analysis with implications for practice*. Portsmouth: RMC Research Corporation, Center on Instruction.

Schumaker, J.B., & Deshler, D.D. (1992). Validation of learning strategy interventions for students with learning disabilities: Results of a programmatic research effort. In B.Y.L. Wong (Ed.), *Contemporary intervention research in learning disabilities: An international perspective* (pp. 22-46). New York: Springer-Verlag.

Schumaker, J. B., & Deshler, D. D. (1994). Secondary classes can be inclusive, too. *Educational Leadership, 52*(4), 50-51.

Schumaker, J. B., & Deshler, D. D. (2006). Teaching adolescents to be strategic learners. In D. D. Deshler & J. B. Schumaker (Eds.), *Teaching adolescents with disabilities: Accessing the general education curriculum* (pp. 121-156). New York: Corwin Press.

Schumaker, J. B., & Woodruff, S. (2005). *Michigan word identification reading study*. Internal report, Center for Research on Learning, University of Kansas, Lawrence.

Showers, B., Joyce, B., Scanlon, M., & Schnaubelt, C. (1998). A second chanceto learn to read. Educational Leadership, 55(6), 27-30

Swanson, H. L. (1999a). Instructional components that predict treatment outcomes for students with learning disabilities: Support for a combined strategy and direct instruction model. *Learning Disabilities Research and Practice, 14,* 129-140.

Swanson, H.L. (1999b). Reading research for students with LD: A meta-analysis of intervention outcomes. *Journal of Learning Disabilities, 32*(6), 504-532.

Swanson, H. L., & Hoskyn, M. (1998). Experimental intervention research on students with learning disabilities: A meta-analysis of treatment outcomes. *Review of Educational Research, 68*(3), 277-321. doi: 10.3102/00346543068003277

Swanson, H.L., & Deshler, D.D. (2003). Instructing adolescents with learning disabilities: Converting a meta-analysis to practice. *Journal of Learning Disabilities, 36*(2), 124-135. doi: 10.1177/002221940303600205

Swanson, H.L., & Hoskyn, M. (1999). Definition X treatment interaction for students with learning disabilities. *School Psychology Review, 28*(4), 644-659.

Swanson, H.L., & Sachse-Lee, C. (2000). A meta-analysis of single-subject-design intervention research for students with LD. *Journal of Learning Disabilities, 33*(2), 114-136.

Torgesen, J.K. (2005a). *Recommendations for actions to accelerate the reading development of struggling readers in Florida's middle schools*. Tallahassee: Florida Center for Reading Research.

Vaughn, S. (2006). The state of reading research and instruction for struggling readers. *Intervention in School and Clinic, 41*(3), 169-174.

Vaughn, S., Gersten, R., & Chard, D.J. (2000). The underlying message in LD intervention research: Findings from research syntheses. *Exceptional Children, 67*(1), 99-114.

Williams, K.T. (2001). *GRADE: Group reading assessment and diagnostic evaluation*. Circle Pines: American Guidance Service, Inc.