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Instructing for fluency in the first grade

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Abstract

This literature review inquired as to how fluency relates to comprehension, what sub-skills are necessary to ensure the development of a fluent reader, and what the top two fluency intervention programs available were according to the What Works Clearinghouse. The author of this literature review used peer-reviewed literature, personal communications, and observations from her first grade classroom to come to the conclusion that beginning readers' fluency led to comprehension. But, when readers have a command over accuracy and fluency then comprehension and fluency were reciprocal skills. The author of this literature review goes on to depict the sub-skills needed to produce fluent beginning readers; namely, phonemic awareness and phonics. The author then describes the top two fluency interventions available to educators as deemed by the What Works Clearinghouse.

INSTRUCTING FOR FLUENCY IN THE FIRST GRADE

A Graduate Review

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Division of Early Childhood Education

Department of Curriculum and Instruction

In Partial Fulfillment

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Master of Arts in Education

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by

Kim Vierkant

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This literature review inquired as to how fluency relates to comprehension, what sub-skills are necessary to ensure the development of a fluent reader, and what the top two fluency intervention programs available were according to the *What Works Clearinghouse*. The author of this literature review used peer-reviewed literature, personal communications, and observations from her first grade classroom to come to the conclusion that beginning readers' fluency led to comprehension. But, when readers have a command over accuracy and fluency then comprehension and fluency were reciprocal skills. The author of this literature review goes on to depict the sub-skills needed to produce fluent beginning readers; namely, phonemic awareness and phonics. The author then describes the top two fluency interventions available to educators as deemed by the *What Works Clearinghouse*.

Table of Contents

Abstract.....	iii
Introduction.....	1
Rationale.....	4
Purpose and Importance of Review.....	5
Terminology and Research Questions.....	7
Methodology	
Locating and Selecting Sources.....	8
Analyzing and Determining Literature Choices.....	10
Review of the Literature	
The Association between Comprehension and Fluency	
Historical evidence of the association between comprehension and fluency.....	12
Current perspectives on the association between comprehension and fluency.....	13
Sub-skills for Fluency Development	
Theories without quantitative evidence.....	17
Researchers with quantitative evidence.....	18
Commercial Programs to Improve Fluency	
Descriptions of Ladders to Literacy and Reading Recovery.....	26
The cost of Ladders to Literacy and Reading Recovery.....	27
Intensity and duration of Ladders to Literacy and Reading Recovery.....	28
Effects of Ladders to Literacy and Reading Recovery.....	29
Conclusions and Recommendations	
Conclusions	
Fluency's relation to comprehension.....	31
Sub-skills for fluency development.....	32
Top two intervention programs to improve fluency.....	33
Recommendations	
Future research.....	35
Teaching practices.....	35
References.....	38

Introduction

The importance of fluency in the development of skilled reading is unquestioned, but there is little empirical evidence on how it develops (Kame'enui & Simmons, 2001). Reading fluency is considered critical to skilled reading, given (a) its correlational, if not causal connection to comprehension (Fuchs, Fuchs, Hosp, & Jenkins, 2001), and (b) evidence that at-risk and typically developing children as early as first grade demonstrate large differences in their reading fluency skills (Deno, Fuchs, Marston, & Shin, 2001).

Sub-lexical skills, such as; phonemic awareness, phonological awareness, letter identification, and phonics (Ritchey, 2004) have been the object of recent studies to show their importance in the development of fluency. Speece, Mills, Ritchey, and Hillman (2003), in a longitudinal study of an unselected sample of kindergarten children, reported that phonological awareness and letter-sound fluency were the best predictors of oral reading fluency in first grade.

Stage, Sheppard, Davidson, and Browning (2001) demonstrated that kindergarten letter-name and letter-sound fluency predicted first-grade oral reading fluency and that letter-naming fluency also predicted growth. Connecting the spelling of written words to their pronunciations and meanings in memory is how Ehri (2005) would maintain fluency is acquired.

The mere act of defining oral reading fluency has proven challenging over the years. LaBerge and Samuels (1974) were among the first theorists to step out and call attention to the importance of fluent reading. Since then reading researchers have stated and shown that an appropriate definition for reading fluency needed to include stages, phases, and sub-skills (Chall, 1996; Ehri, 1998; Stahl, Heubach, & Holcomb, 2005). All those stages, phases, and sub-skills needed to be developed to the point of

automaticity. The automaticity would then allow the reader's attention to be focused on the meaning of the text being read (LaBerge & Samuels, 1974).

Still, there were other researchers who maintained fluency would become apparent when all the components in reading work together (Fuchs, Fuchs, Hosp, & Jenkins, 2001; Hudson, Lane, & Pullen, 2005; Rasinski, 2004; Speece & Ritchey, 2005). The three components they listed included; (1) accuracy in word decoding, (2) automaticity when reading, and (3) the ability to parse text into syntactically and semantically appropriate units.

Widely published authors Kuhn and Stahl (2003) reiterated the above theorists' definition with different terminology. "It is important to consider a definition of fluency that encompasses more than rate and accuracy. Prosody is the other necessary component in fluent reading" (p. 5). Kuhn and Stahl described prosody as ". . . expressive reading, using tonal and rhythmic aspects of language while appropriately chunking groups of words into meaningful units according to the syntactic structure of the text" (p. 5).

Simplistic theorists would define reading fluency in much simpler statements (Allington, 2009; Good & Kaminski, 2002; Huey, 1908). Fluency to them included reading accurately with expression so that one's comprehension would be impacted in a positive manner; in their words, proficient reading.

Other simplistic theorists had an even less complicated way of defining reading fluency. They concurred reading ability was composed of two factors – decoding and comprehension (Aaron, Joshi, Gooden, & Bentum, 2008; Gough, 1996; Juel, 1988).

I would interpret that to mean if you can decode then you can read and if you can read you are able to comprehend.

An interesting definition of reading fluency came from Vadasy, Sanders, and Peyton (2008). They stated, "Reading fluency is automatic word recognition skills that develop as phonological decoding strategies are repeatedly applied in self-teaching experiences that build a sight word lexicon" (p. 51). It appears Vadasy et al. extended Ehri's (2005) definition with the addition of the phrase *self-teaching experiences*. Are self-teaching experiences related to repeated readings or maybe even wide-reading? Wolf and Katzier-Cohen (2001) described the ominous complexity of fluency in their encompassing description:

Reading fluency involves every process and sub-skill involved in reading, and as such, mischief and inefficiencies are possible from multiple sources and across a continuum of processes. In its beginnings, reading fluency is the product of the initial development of accuracy and the subsequent development of automaticity in underlying sub-lexical processes, lexical processes, and their integration in single-word reading and connected text. These include perceptual, phonological, orthographic, and morphological processes at the letter, letter-pattern, and word levels, as well as semantic and syntactic processes at the word level and connected-text level. After it is fully developed, reading fluency refers to a level of accuracy and rate where decoding is relatively effortless; where oral reading is smooth and accurate with correct inflection; and where attention can be allocated to comprehension. (p. 212)

Their description is the one that guided me as I attempted to discover an illusive process- the most effective and efficient procedures for developing fluency in my first grade students. The course would undoubtedly be complex but it had to traveled.

Rationale

It is essential that I understand how reading fluency is acquired, maintained, and perfected in my profession as a first grade educator. The literature I reviewed will direct my classroom instruction and any interventions I may need to implement. Following the use of this quality, researched based instruction and possible prescribed remedies, my students will be demonstrating a higher degree of reading proficiency. A high degree of reading proficiency will lead to comprehension gains (Allington, 2009; Eldredge, 2005; & Huey, 1908).

Students will become intrinsically motivated to read as their reading skills improve (Quirk, Schwanenflugel, & Webb, 2009). They will read for longer periods of time when it can be done effortlessly. The more time spent on reading, the more efficient readers they will become and once again they will want to read more. It is a cyclical phenomenon.

Developing fluent readers would prevent a myriad of related issues from emerging. Some of those issues that plague non-fluent readers are lack of comprehension when reading text, reluctance and often refusal to even attempt to read. Students even disassociate themselves from the classroom setting as they see themselves as inferior to their peers who demonstrate greater fluency in their reading (Rasinski et al., 2005).

Juel (1988) conducted a longitudinal correlational study that followed the same group of poor readers from first grade through fourth grade. She used their middle of the year test scores on phonemic awareness, decoding, word recognition, comprehension and attitude towards reading to track them each year.

The results of the research showed 26 out of the 29 readers who were in the bottom quartile in first grade remained there in the fourth grade. Juel (1988) faulted the low scores of the students' phonemic awareness tests along with their attitude towards reading as factors that prevented them from becoming better readers.

Purpose of Review

I needed to find out for myself the precise steps dictating how fluency develops. I also desired to grasp the literature that elicits the best possible strategies to use for teaching all the various components of the reading skill termed fluency. By reviewing the available literature on past practices for teaching fluency compared to the current commercial programs available for teaching fluency, I was able to make informed decisions. The decisions I made determined what, when, and how my first grade students were instructed as far as sub-lexical skills and subsequent fluency building.

Did a student need more intense decoding practice? Did he need to reread a passage several times in order to internalize it i.e., comprehend it? Did he have a command over letter sounds to the point of automaticity or was he just accurately identifying letter sounds? I now would have an abundance of research based evidence to defend the regime I prescribed for my students. I also had an informed response for my principal's inevitable questioning.

Importance of Review

Louisa Moats (1999) wrote, "To understand printed language well enough to teach it explicitly requires a disciplined study of its systems and forms, both spoken and written" (p. 1). Undertaking this review on the topic of reading fluency has forced me into that disciplined study in order to discover what exactly underpins the skill of reading. There are a multitude of facets involved when teaching fluency. All the reading fluency components have to merge in a timely manner for a person to be considered a fluent reader.

A person who is not a fluent reader will undoubtedly struggle with other academics besides reading. Many students who labor when trying to read at an adequate pace with smoothness and prosody yielded below grade level scores in comprehension (Rasinski, 2006). These students eventually became disillusioned with the whole process of learning. The downward spiral of disliking school in general began.

As a first grade teacher I wanted to locate a research-based plan or system for ensuring I would be teaching in the necessary manner to ensure fluent readers developed in my classroom. By implementing such a plan I could preclude future students from experiencing negative associations with reading because of a fluency deficiency. Those negative associations can instill a dread of learning. Instead, students would look towards their upcoming school years without apprehension.

I wonder how the drop-out rate would be affected if early childhood teachers could guarantee that every one of their students would be a proficient reader by grade 3. I predict that will be another literature review paper.

Terminology

Graphophonic: This term refers to letter patterns that stimulate visual and auditory memories of a word (May, 1990).

Orthographic: This term refers to a language in print form (May, 1990).

Sub-lexical Skills: These skills are generally accepted to be pre-requisites for learning to read. They include: phonemic awareness, phonological awareness, letter identification, and phonics (Ritchey, 2004).

Phonological Development: This is acquiring the rules of language that govern the sound structure of syllables and words (Pence & Justice, 2008).

Research Questions

1. What type of an association exists between fluency and comprehension?
2. What regimen of sub-skills is required to produce fluent beginning readers?
3. How do the two most highly recommended commercial programs for improving fluency, according to the What Works Clearinghouse, accomplish their objective?

Methodology

Locating and Selecting Sources

I utilized Rod Library at the University of Northern Iowa via the *Internet* for the majority of this research. My initial search phrase using Panther Prowler was *reading fluency*. After skimming through two dozen articles, and realizing they were dissecting the brain in order to find out how a fluent reader reads, I knew I needed to refine my search.

Fluency intervention was the more specific phrase I used for searching the library's electronic resources. When the results appeared I discovered I needed to narrow the search even more by looking for articles pertaining to beginning readers of English. There were articles on *fluency after a stroke* or *fluency with autistic children* and also *fluency in other languages* before this third delineation was put into place.

The next search phrase needed to contain words to the effect of *beginning reader fluency* or *fluent elementary readers* as that is my area of concern. It was amazing that by simply inverting the terms in a search, one could be presented with an entirely different array of articles.

Following the printing of the 65 peer reviewed articles that appeared after that search, I began scanning through the reference pages of each article to cross reference with other articles' reference pages. It was clear there were a number of authors publishing who were quite devoted to the issue of beginning reading and developing fluency. I then used those authors' names as a search tool for locating more literature.

An additional method I employed for locating peer-reviewed journal articles was to access a database that handled a specific journal's title, such as *Reading Research Quarterly* or *Educational Research*. Next, I would type a year, no later than ten years ago, into the year published box. All the issues published that year would appear, and I visually scanned through each issue and volume, title by title, looking for key words such as *fluency*, *beginning reader*, or even the name of a specific commercially produced intervention program.

A unique resource that came to my attention due to Jill Uhlenberg (personal communication, June, 2008) was the *What Works Clearinghouse* (WWC). It evolved when the No Child Left Behind Act's (U.S. Department of Education, 2002) legislation recommended that educators use programs and practices that were scientifically research based. The clearinghouse synthesizes submitted research to identify the most effective practices available to pre-kindergarten teachers through grade 12 educators.

Once connected with the U. S. Department of Education's web site as a result of the What Works Clearinghouse, I found myself diverting off to its *research* link. The *research* link led me to numerous research based articles. The National Reading Panel, Reading First, Put Reading First, National Institute for Literacy, and National Institution for Children's Health and Development all contained information on all the aspects of literacy.

Timothy Rasinski (personal communication, July 22, 2008) was another provider of information as he spoke at the national "I Teach First!" conference in San Antonio, Texas, which I had the opportunity to attend. He spoke exclusively on the topic of improving a beginning reader's fluency. His presentation summarized many of his

authored articles that I have read. Those articles appeared in *The Reading Teacher*, *The Journal of the International Reading Association*, and *Journal of Literacy Research*.

A significant resource I used that I believe is not utilized enough by educators was the Area Education Agency (AEA). There are 10 agencies in Iowa and each serves a collection of school districts. My school is associated with AEA 267 and it houses thousands of educational aids in all types of media.

I used their web site and typed in the search term *fluency strategies for beginning readers*. Over 100 items were available for loan on that subject. Many of the items were edited books and I have been careful to steer away from books. The edited books tend to be a secondary source, reporting on someone else's research. I did succumb to using a few edited texts, as I believed the authors to be credible. There were also several commercial products touting success with improving fluency that I perused.

Analyzing and Determining Literature Choices

There came a point in this review when I had to engage in self-talk and convince myself that I had an ample amount of literature to answer the three questions I had posed. I began the process of organizing the various articles into the following categories as I skimmed through abstracts and conclusions of each paper:

1. Research associating beginning reading fluency with comprehension.
2. Research listing the necessary skills to be taught to guarantee that beginning readers are fluent.
3. Research verifying the effectiveness of commercial products or methods that improve beginning reading fluency.

I read each article with the purpose of finding studies and theories that would apply to any of the three areas in the above list. I kept a five-column chart on my computer's

desktop screen and entered the last name of the author and the date of the paper in the first column. The second column held the page numbers where the information appeared. The next three columns contained each area of inquiry I had chosen.

The more I read, the more I came to realize the enormity of my chosen topic. It occurred to me that I could possibly end up over simplifying the vast realm of fluency. I would undoubtedly have an extensive database of information concerning reading fluency by the end of the literature review.

I *do* possess a vast collection of articles that I have gleaned but have not totally digested. I *did* have to simplify the conclusions to my inquiries regarding fluency as it is plainly beyond the scope of my understanding at this time. However, I am apparently in good company. It appears that explaining the choreography between the multifaceted dimensions of reading fluency and comprehension is a perplexing task for a number of recognized researchers as well (Allington, 2009; Fuchs, Fuchs, Hosp, & Jenkins, 2001; Hudson, Pullen, Lane, & Torgesen, 2009; Kuhn, 2005; Miller & Schwanenflugel, 2008; Wolf & Katzir-Cohen, 2001).

I do not expect to end my query concerning fluency with the completion of this literature review. I will continue to subscribe to peer reviewed journals for the latest advances in reading research as it applies to effectively teaching beginning readers.

Review of the Literature

The Association between Comprehension and Fluency

The first question pertinent to this literature review was phrased, “What is the association between fluency and comprehension?” A person can go back to Huey (1908), and probably further, to discover the controversy concerning the connection between comprehension and historical evidence of the association between comprehension and fluency. The bigger question to ask would be, “Is there a causal or reciprocal relationship between comprehension and fluency?”

Historical evidence of the association between comprehension and fluency. Huey (1908) reflected on an experiment that occurred in 1894 where 40 college girls were individually timed on a reading. The students were unaware of the study and later were asked to write down as much as they could remember about the story.

The results were divided into levels of reading speed — fast, moderate, and slow. Huey (1908) reported that each category of reader had members who could comprehend either well, fairly, or poorly. He came to the conclusion that comprehension may be independent of the rate of reading.

Huey’s (1908) next entry described an experiment where 50 college students were tested on their comprehension compared to their rate of reading. It was found the faster readers could produce 37% more recall information than the slower readers. So Huey would surmise from the study that comprehension correlates to a reader’s fluency rate. The text did not reveal the specific instructions given to the group of 50 college students.

Current perspectives on the association between comprehension and fluency.

A recent study by Kuhn et al. (2006) used 24 second-grade classrooms (five of the classrooms served as control groups) over the course of a school year to demonstrate how comprehension could be improved by increasing fluency rates. The students' fluency rates were subsequently raised by allotting more reading time with connected text and participation in partner reading, echo reading, and choral reading.

Williams (2006) would be in accord with Kuhn's et al. (2006) experiment as she was a strong advocate for direct instruction. A thought provoking quote from Williams stated:

Comprehension, we say, is all of a piece...because these processes work together, we say, they cannot be separated in instruction. Maybe we should rethink skills at the elementary school level—skills like finding the main idea, picking out relevant details, identifying sequence—because skills, superficial as they may seem, represent, at the early stages of instruction, the product of comprehension. The reading process has to be manifested in some kind of performance that the teacher can respond to with feedback and guidance. . . specific guidance. (p. 139)

The National Reading Panel's (NICHD, 2000) fluency subgroup reported a beneficial finding when they were synthesizing research for a teaching method that would increase reading fluency. Several of the comparisons showed the procedure to increase fluency had a high impact on the comprehension scores as well. The panel speculated, ". . . the changes in comprehension may have taken place simultaneously, with the improvements in fluency, or there could be a hierarchical order to it, with the lowest level

readers improving in word recognition and the highest ones in comprehension" (p. 318).

Fuchs, Fuchs, Hosp, and Jenkins (2001) provided evidence that an oral reading fluency measure had a higher correlation with performance on commercial, standardized tests of reading comprehension than did more direct measures of reading comprehension. A direct measure could be fill- in- the- blank questions about the main idea or passage details.

A later study based on Fuchs et al. (2001) compared timed list reading and timed passage reading by skilled and unskilled fourth graders. They discovered the skilled readers read the lists twice as fast as the unskilled readers. The passages were read three times faster. Jenkins, Fuchs, van den Broeck, Espin, and Deno (2003) concluded teachers could use context fluency rate to estimate a student's overall comprehension.

A study by Rasinski et al. (2005) revealed that 303 of a school district's ninth graders performed almost two grade levels below the rest of their class in the area of fluency. When Rasinski et al. (2005) correlated their fluency rates with their scores on the comprehension questions there was a moderately strong relationship between the two variables.

The results also made it clear the students were accurate decoders but they did not have the automaticity to drive their fluency. Thus, the fluency rate was low and comprehension was negatively affected. Rasinski et al. (2005) maintained the high school students could increase their fluency rate if they were to participate in an intervention that was guided with direct instruction based on fluency and comprehension strategies. The article was the researchers way to strongly warn teachers that intervention lessons needed to emphasize comprehension strategies *along* with fluency building.

Hudson, Pullen, Lane and Torgesen (2009) referred to comprehension and fluency as *being reciprocal in nature* seven times throughout their article. They made those references after they declared the purpose of the article was not going to focus on anything but accuracy and rate as far as the aspects of fluency were concerned. The association between comprehension and fluency was difficult to ignore apparently.

When Samuels and Flor (1997) declared their position on comprehension and fluency's relationship there was a reiterating of the automaticity theory once again. They maintained if first, a reader were fluent, reading with automaticity, then there would be more room in the reader's brain for comprehension to take place.

Research by Näslund and Schneider (1996) appeared to support the theory that fluency determined comprehension as well. Their longitudinal study of 124 German six-year-olds revealed slow decoders of connected text also had low comprehension scores. Näslund and Schneider suggested more research needed to be conducted on the relationship between verbal processing, memory span, and decoding.

Riedel (2007) conducted a study using subtests of Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002) to find out what subtest would successfully predict a student's comprehension ability most often. He also administered the Group Reading Assessment and Diagnostic Evaluation (GRA-DE; Williams, 2001) and the TerraNova (CTB/McGraw-Hill, 2003) for the same purpose. The subjects were 1,518 African American first graders of high poverty in Memphis, Tennessee.

The results revealed the highest correlation to comprehension was the DIBELS oral reading fluency (ORF) subtest. DIBELS ORF correctly predicted the comprehension status of students at the end of first grade and second grade, 67% to 80% of the time. The

other subtests of DIBELS; phonemic segmenting, nonsense word fluency, and letter naming did not show a strong correlation.

Samuels (in Riedel, 2007) was on the reviewing panel for Riedel's research article. He commented that beginning readers were so hampered with identifying the printed words that they were not able to comprehend at the same time. "A beginning reader's strategy is sequential, first word recognition and then comprehension" (p. 564). Samuels explained that the reading process for readers who had become automatic at word recognition would *then* involve decoding and comprehending simultaneously.

There must be an infinite number of synaptic possibilities to explain the process of comprehension development. Multiply that by each individual's unique synthesizing structure and one can envision the monumental task researchers might have before them. I believe the task before them could be to prove, using duplicative scientific methods, how human beings comprehend text.

Sub-skills for Fluency Development

The second question, which was of grave importance to me, concerned the sub-lexical skills needed for developing a fluent reader and the exact course for teaching those prerequisite skills. Was the journey to fluency a systematic, stepping stone process or a whirling blend of abilities that would appear with a reader's developmental maturation?

This section of the chapter describes several theorists' and researchers' speculated routes to fluency. The theorists with whom I began the monograph suggest, predict, or delineate their theories. Absent from the assumptions is clinical research showing quantitative results that their theories *could* be reality. Still, their ideas are worthy of consideration.

Theories without quantitative evidence. Pikulski and Chard (2005) attempted to delineate the early literacy elements that result in fluent oral reading. They described how fluency could be refined and the way it should be assessed. Pikulski and Chard proposed the following nine steps:

1. Build the graphophonic foundations for fluency, including phonological awareness, letter familiarity, and phonics.
2. Build and extend vocabulary and oral language skills.
3. Provide expert instruction and practice in the recognition of high-frequency words.
4. Teach common word parts and spelling patterns.
5. Teach, model, and provide practice in the application of a decoding strategy.
6. Use appropriate texts to coach strategic behaviors and to build reading speed.
7. Use repeated reading procedures as an intervention approach for struggling readers.
8. Extend growing fluency through wide independent reading.
9. Monitor fluency development through appropriate assessment procedures that include prosody and smoothness measures. (p. 513)

Pikulski and Chard (2005) based their theory on the works of Ehri (1998, 2005) and the National Reading Panel's report from 2000 (NICHD, 2000). They maintained educators needed to look at what foundational skills came together to form a fluent reader. They believed the majority of educators today are simply stressing speed reading and calling it fluency.

Rasinski (2004) suggested that fluency could be attained as the students master the phonological aspect of the English language. The students would need to become accurate in their decoding to the point of automaticity. Once the reader reached an acceptable reading rate the student would parse text into syntactically and semantically appropriate units. Hazen (1895) corroborated Rasinski's parsing technique as being necessary for comprehension: ". . . grouping means to collect into groups the expressions that are to be read as a single word. It has nothing to do with punctuation, but rests solely on the meaning" (p. 4).

Hudson, Lane, and Pullen (2005) declared that word-reading accuracy is imperative before a reader could be considered fluent. They go on to describe the steps to get to accurate word reading. First, the student would identify the sounds represented by the letters or letter combinations. Second, the sounds were blended. Third, phonograms or common patterns across words were remembered and read. Lastly, the meaning of the word would be used to determine its pronunciation (e.g., a *bow* on a ship and a *bow* around a person's neck).

Researchers with quantitative evidence. The panelists chosen to represent the National Reading Panel's subgroup for the fluency component of reading were Jay S. Samuels, Timothy Shanahan, and Sally E. Shaywitz (NICHD, 2000). They viewed

fluency as a skill unto itself—one of five critical skills to be mastered before a reader could be declared proficient. The four other factors identified as being essential were: phonemic awareness, phonics, vocabulary, and comprehension. The panel's emphasis was locating a method that would increase a student's *current* fluency level. They were not concerned about the process in becoming fluent.

A longitudinal study developed by Morris, Bloodgood, Lomax, and Perney (2003) followed 102 kindergartners in North Carolina. The objective was to test the theoretical relationships among observed variables during emergent reading. The students were monitored from the beginning of their kindergarten year to the end of their first grade year. A more specific goal of the study was to find out when concept of word in text (finger-point reading) would occur in relation to spelling with beginning and ending consonants.

Morris et al. (2003) alleged there were seven ability areas in the proposed model that beginning readers went through before they were able to read words in context. The components were; (a) alphabet knowledge (b) beginning consonant awareness, (c) concept of word in text (finger tracking words on a page), (d) spelling with beginning and ending consonant awareness, (e) phoneme segmentation, (f) word recognition, and (g) contextual reading.

The students were assessed at five equally spaced intervals over the 2-year study. They were tested on six of the seven components each time. The contextual reading test was the seventh component and its exam was administered for the first time at the end of

first grade. Morris et al. (2003) did discover the *concept of word in text* skill begins to emerge at stage (c) and is perfected by stage (e) of the researchers' sequence of reading acquisition.

After the first testing date the 102 children were placed in the high- or low-readiness group based on their alphabet knowledge score. Morris et al. (2003) reported the gap between the low-readiness group's scores and the high-readiness group's scores never narrowed during the 2-year study.

Speece and Ritchey (2005) showed that a child's capacity for reading fluently appeared earlier in their development than previous studies had claimed. They also hypothesized that reading fluency increased alongside the developing sub-lexical skills which opposed the theory that reading fluency was a result of sub-lexical skills.

The sample in Speece and Ritchey's (2005) research included two cohorts of first-grade students. They were identified with a purposive sampling plan as to their degree of risk for reading failure. The 276 participants were assessed with a letter-sound fluency measure.

If a student fell in the bottom 25th percentile of the group they were labeled AR for at risk. The rest of the group was then labeled NAR for not at risk. There were 140 AR subjects and 136 NAR participants. The purpose of the Speece and Ritchey's (2005) investigation was to show what skills were lacking that contributed to their low fluency rates when compared to their classmates.

Speece and Ritchey's (2005) longitudinal growth curve analysis model used curriculum-based measures to assess the students on a number of variables. Those items were initial fluency skill in: letter-name, letter-sound, single words, and connected text.

RAN (rapid automatized naming), phonological awareness and intelligence were also measured. The subjects' academic competence, another variable, was tested with the Social Skills Rating Scale-Teacher Version. The norm-referenced rating scale assessed academic competence with a 5-point Likert scale and was completed by each participant's teacher.

When the growth curve analysis model was concluded the authors, Speece and Ritchey (2005) reported the three highest correlations for predicting reading fluency growth. The highest correlation was the students' previous reading fluency score five months earlier. Word reading efficiency rate was the second most reliable predictor of a first grader's oral reading fluency at the end of the academic year. The child's overall academic competence was listed as the third highest predictor for oral reading fluency.

Eldredge (2005) conducted a longitudinal study to determine if there was a causal relationship between phonics knowledge and word recognition, and subsequently a causal relationship between word recognition and fluency. 92 first graders, 92 second graders, and 49 third graders were randomly chosen from two different schools in Utah. The subjects were representative of all the different socioeconomic groups.

Two instruments were used to test the word recognition hypotheses (Eldredge, 2005). The first included a running record for each subject where the words read correctly were tabulated. The other assessment consisted of 3 lists of regular graphophonic words with each list progressively more difficult. A fourth list that was also administered contained low frequency, irregular graphophonic words.

The students' phonics knowledge was assessed with three lists of pseudo-words that were created according to the graphophonic structure of real words (Eldredge, 2005).

The tests were given to the first, second, and third grade students in February and then again in November when they had moved on to the next grade. Trained educators administered the tests individually to all the students.

Eldredge (2005) used the cross-lagged panel analysis with the test results in order to detect existing causal relationships between the variables. He did acknowledge there were skeptics of the technique because of possible manipulation of the variables. He maintained it was still helpful for identifying the influences between variables.

The results confirmed what was hypothesized. The correlation between the February phonics measure with the word recognition measure in November was greater ($r = .60$) than the correlation of the word recognition measure in February with the phonics measure in November ($r = .31$). Eldredge (2005) explained the results, “The larger of the two significantly-different correlations indicates the causal path” (p. 176). Further comparisons were made between word recognition and fluency, fluency and word recognition, phonics and fluency, and lastly, fluency and phonics.

The correlations revealed that growth in word recognition was a causal factor in the gain in fluency and not the other way around. The comparison of the phonics measure to the fluency measure and vice versa did not show their differences to be statistically different ($r = .71$ to $r = .66$). Therefore, a direct causal path between those two was not conclusively established (Eldredge, 2005).

Eldredge (2005) presented his theoretical model for reading development in the following hierarchy:

1. Phonemic awareness is a necessary, while not sufficient condition for phonics knowledge.

2. Phonics knowledge is a necessary, while not sufficient condition for word recognition.
3. Word recognition is a necessary, while not sufficient condition for fluent reading.
4. Fluency is a necessary, while not sufficient condition for comprehension. (p. 179)

A similar theory was tested by Vadasy, Sanders, and Peyton (2005). They predicted individualized, code-oriented tutoring would result in a growth transfer to a broader set of reading skills that included fluency. This was a longitudinal study as they followed a group of first graders to the end of third grade.

Vadasy et al. (2005) used paraeducators to tutor 79 first graders for 30 minutes four days each week, during 20 consecutive weeks of the school year. The sessions were on an individual basis and the children received instruction in letter-sound correspondence, phoneme decoding, irregular words, spelling, and oral reading.

The findings of Vadasy et al. (2005) study revealed students who began the tutoring program in the lowest 20th percentile at the beginning of first grade ended up in the 50th percentile at the beginning of third grade. The group was thus labeled *more responsive* and the rest of the group was labeled *less responsive* as they did not reach the 50th percentile mark until the end of third grade. The authors noted the *less responsive* group consistently trailed behind the other group across all skills tested from the onset and to the end of the study.

The trait most impacted by the tutoring sessions was fluency, according to Vadasy et al. (2005). The results of the study showed that fluency received the highest percentage of students scoring in the 50th percentile following the individualized, code-oriented

tutoring. The second highest affected skill was decoding, then word reading, and comprehension. The lowest component affected was spelling with just 27% of the treatment group reaching the 50th percentile.

Locating the most important sub-skills that together result in a fluent reader is a much simpler task than explaining the relationship between comprehension and fluency. The sub-skills are visible and pliant. The previous studies demonstrated there *are* necessary skills beginning readers need to internalize before fluency can develop. These skills included; phonological awareness, letter-sound identification, and fluent word recognition. I am not convinced they demonstrated *how* those skills were attained; in a linear manner or an interactive process. Perhaps it could be that each individual reader determined that through his personal synthesis of the skills.

Commercial Programs to Improve Fluency

The final question in this literature review was posited, “What are the two most highly recommended commercial programs for improving fluency according to the *What Works Clearinghouse* (WWC, 2008a) and how do they reach their objectives?”

The U. S. Department of Education has endorsed the *What Works Clearinghouse* (WWC) with its inception in 2002. The WWC is currently the largest entity for synthesizing research on educational programs (Slavin, 2008). \$30 million was spent between 2002 and 2007 to review educational intervention programs in eight areas: (a) early childhood education, (b) beginning reading, (c) elementary math, (d) programs for English language learners, (e) middle school math, (f) character education, (g) dropout prevention, and (h) adolescent literacy (Slavin, 2008).

The beginning reading category in the WWC is further divided into four domains. They are: (a) alphabets, (b) fluency, (c) comprehension, and (d) general reading

achievement. Each domain is ranked separately and the six different rankings include: (a) positive effects, (b) potentially positive effects, (c) mixed effects, (d) no discernible effects, (e) potentially negative effects, and (f) negative effects (WWC, 2008a).

Along with a ranking for each domain, there is an improvement index assigned. The improvement index can be interpreted as the expected change in percentile rank for an average comparison group student if the student had received the intervention. An intervention program could earn anywhere between a - 50 to a + 50 as an index rating depending on its effectiveness (Slavin, 2008).

The *What Works Clearinghouse* listed the most effective beginning reading intervention program for improving fluency as *Reading Recovery*, (WWC, 2008b). Its improvement index was a + 46. The second most successful program that has the potential of improving fluency is *Ladders to Literacy*, (WWC, 2007), with a score of + 26. The highlights of each plan, as far as how they improved fluency in beginning readers, is summarized in the following sections.

Descriptions of Ladders to Literacy and Reading Recovery. The primary focus of *Ladders to Literacy*, (Notari-Skyverson, O'Connor, & Vadasy, 2000) is aimed at pre-kindergarten and kindergarten students. It is a complete curriculum that includes activities in all the foundational literacy skills that are pertinent for beginning readers to master (O'Connor, 2000). Letter identification, letter sounds, rhyme production, segmenting, and blending are the skills taught in *Ladders to Literacy*.

The intervention is based on being proactive with early detection of preschoolers' and kindergartners' reading acquisition deficits. Formal assessments are administered in October, January, and March. If a student does not score above 85 on the Woodcock-

Johnson literacy subtests he, in addition to whole group lessons, is directly instructed on a one-to-one basis. When the student demonstrates adequate, stable growth he returns to whole group lessons exclusively (O'Connor, 2000).

The intervention *Reading Recovery* ranked number one by the *What Works Clearinghouse*, is referred to as a high impact, short-term intervention with a long-term effect by the *Reading Recovery Council of North America (RRCNA, 2008)*. It was developed by New Zealand's Marie M. Clay and was accepted by the United States in the mid-1980s.

The program's key component is its intensive training required before becoming a *Reading Recovery* (RR) teacher. One academic year of compulsory training is completed while the teacher is conducting RR in a one-to-one scenario in the classroom. The training utilizes the scaffolding technique as teachers practice making instantaneous teaching decisions according to the responses of the RR student (Bufalino, 2007).

RR is focused on the first grade year only for those students scoring below the 20th percentile. The students are assessed with Clay's Observation Survey that includes six components, all of which are untimed except the 10-minute word writing: (a) letter identification, (b) word reading, (c) concepts about print, (d) writing words list, (e) word dictation, and (f) text reading (Reynolds & Wheldall, 2007).

The framework for an RR lesson is one-to-one and connects reading with writing by; (a) re-reading familiar texts, (b) reading the previous day's new book, (c) word work (letter identification, breaking words apart, and word isolation), (d) writing a message or story, and (f) introducing and reading a new book (Cox & Hopkins, 2006). The child's

progress and responses are documented each day through running records, daily lesson records, and weekly records.

The Cost of Ladders to Literacy and Reading Recovery. *Ladders to Literacy* has a one day training session at the cost of \$1500 plus the travel expense of the trainer to come to the site. The authors of the intervention stress it to be beneficial to have experienced users of *Ladders to Literacy* observe the beginning users and mentor the new users throughout the first school year. The 2007, second edition, 352-page curriculum manual costs \$49.95. It contains phonemic awareness activities to use with students. The activities are arranged in the sequence they need to be presented. Any additional materials for *Ladders to Literacy* would amount to items a teacher decided could benefit the students (Notari-Skyverson et al., 2000).

Reading Recovery teachers have a three-tiered professional staffing system. The university trainers train and support teacher leaders; the teacher leaders then train and support the school-based teachers who are teaching first graders. The cost of the training when computed per student serviced over a five year period is approximately \$100 per student serviced. A *Reading Recovery* teacher would typically serve 40 students over a five year period (WWC, 2008c).

After the initial year long training, teachers meet with their trainers and colleagues for contact sessions. The contact sessions allow teachers to learn from each other and also learn how new knowledge in the field could influence their routines in the classroom. A one-time expense of \$4000 goes toward an extensive leveled library that becomes the teaching material (WWC, 2008c).

The *Reading Recovery Council of North America* (RRCNA, 2008), uses a cost-effectiveness formula to display the price of its intervention. All the numbers needed for the formula are publicly available. When compared to other interventions, RR is the cheapest in the long run because it does not continue past 20 weeks. "You can pay up front or you can pay at the end as the saying goes" (Overbeck, 2009).

WWC contributed the following cost information about *Reading Recovery*:

In 2006, the cost of program materials was approximately \$100 per student served (calculated by the RRCNA as an average over the five years, 2002–06). Sites pay an annual data evaluation fee of \$350 per site plus \$45 per *Reading Recovery* teacher. Related ongoing costs include professional development for both teacher leaders and teachers, books and materials for lessons, student program materials, and data evaluation fees. Sites implementing the program also pay annual technical support fees, which vary by the universities providing the training (WWC, 2008c).

Intensity and duration of Ladders to Literacy and Reading Recovery. *Ladders to Literacy* begins the year with intense phonological instruction for the whole class, following the outline of activities in their manual. When October assessments indicate a group of students are not responding to the large group intense instruction the group is assigned one-to-one instruction for 12-minute sessions. The sessions meet three times per week for 10 weeks in addition to the whole group lessons. The program follows the class into first grade as well and offers support on a less intensive level (O'Connor, 2000).

Reading Recovery takes the lowest students from the 20th percentile in the first grade on an individual basis. Each session is 30 minutes and the student and teacher meet

every school day for a period of 12-20 weeks. The sessions follow a specific regimen each day using reading and writing. Continual scaffolding through the teacher's comments and the personalized lesson plans progress the student through the levels of reading material (Cox & Hopkins, 2006).

Effects of Ladders to Literacy and Reading Recovery. The *Ladders to Literacy* group did make progress in segmenting and blending skills as long as they had continual intense intervention (O'Connor, 2000). When those same students went to first grade and received less specialized instruction, only 1% stayed caught up to the average first grader. It was reported that several in the group were subsequently placed in special education.

O'Connor (2000), an author of *Ladders to Literacy* stated, "These findings are sobering because we may be seriously overestimating the effects of our short-term interventions on the long-term trajectory of reading growth" (p. 50). The *What Works Clearinghouse* deemed the LL intervention as the second best plan available to date.

There have been numerous longitudinal investigations into the sustained effectiveness of *Reading Recovery* (Baenen, Bernholc, Dulaney, & Banks, 1997; Bufalino, Wang, Gómez-Bellengé, & Zalud, 2007; Pinnell, Lyons, DeFord, Bryk, & Seltzer, 1994; Schwartz, 2005). The reports showed that 75% of selected RR students successfully exited the program and 67% from that group maintained their high-average reading ability through their second grade year. The students who did not successfully complete *Reading Recovery* were found to have fallen into either the below average group (18%) or the severely disabled group (15%) by the end of their second grade year.

Reading Recovery is not without opponents. Several authors continue to question RR's effectiveness (Groff, 2004; Iversen & Tunmer, 1993; Reynolds & Wheldall, 2007) both in its long-term reading success with RR students and also with its high price tag. Groff (2004) contended proponents of *Reading Recovery* have been downplaying its cost by not including teacher training and additional teacher benefits in its cost-effectiveness figure.

Others expressed concern that RR was missing important phonological components that all beginning readers need to be systematically taught (Iversen & Tunmer, 1993). Lastly, Groff (2004) claimed "Most of the principles and practices of RR are not based firmly on the relevant experimental research findings on reading development" (p.52).

Conclusions and Recommendations

Conclusions

Fluency's association with comprehension. The first question in this literature review attempted to establish how fluency is associated with comprehension. Whether comprehension improves as a result of increased fluency; or, fluency is a result of comprehending the text; or, the two have a reciprocal relationship. Those were the different pathways from which to choose.

I am concluding two theories have to transpire when referring to a beginning reader. The article that brought me to that decision was Samuels' review of Riedel's (2007) research. I knew that a beginning reader's reading could not be driven by comprehension because there were so *few words* they were able to identify.

As their first grade year ends, however, they are using their comprehension or meaning of the sentence to determine unrecognizable or new words. At that point I have to change my view that comprehension and fluency have a reciprocal association.

The majority of the remaining research and theories I reviewed (Fuchs et al., 1998, 2001; Hudson et al., 2009; Huey, 1908; Kuhn et al., 2006; Rasinski et al., 2005) claimed a strong correlational relationship existed between comprehension and fluency. Correlational does not translate to mean there is a causal relationship so until more convincing research appears, a reciprocal association would describe the relationship between comprehension and fluency.

Sub-skills for fluency development. The second question in this literature review attempted to tease out every minute skill that fluent readers need to possess in order to be considered fluent. Moats (1999) offered a succinct and concise response with her statement, "Yes, teaching reading *is* rocket science" (p. 1).

Letter-sounds and subsequent letter-sound fluency is one of the earlier skills needed as many studies reported (Ehri, 1998, 2005; Eldredge, 2005; Hudson, Lane, & Pullen, 2005; Rasinski, 2004; Speece & Ritchey, 2005; Vadasy, Sanders, & Peyton, 2005). Additional skills needed are phonological awareness, segmenting words, blending words, (Eldredge, 2005; Morris, Bloodgood, Lomax, & Perney, 2003; Speece & Ritchey, 2005). Understanding the concept of a word, where the beginning and ending sounds in a word are and how to manipulate those sounds all should lead to accurate word reading.

Once the reader is accurate and automatic in his word reading and connected text reading he should practice phrasing, intonation, and prosody while reading orally (Hudson, 2009; Kuhn & Stahl, 2003; Quirk, Schwanenflugel & Webb, 2009; Rasinski, 2006). He also needs to spend time manipulating words by physically breaking them apart into their specific functions; such as, the base word, the prefix, the suffix, plurals, contractions, compound words, synonyms, antonyms, and homophones (Ehri, 2005).

Moats (1999) aptly expressed what I have deduced from the literature pertaining to fluency sub-skills, "At every level, teachers need to connect the teaching of these skills with the joy of reading and writing, using read-aloud time, reader's theatre, choral reading, and other developmentally appropriate literacy activities" (p. 52). Expert teachers, according to Moats (1999) ". . . will judge what to do with particular at-risk

children, not on the basis of ideology but on the basis of observation, logic, knowledge of child development, knowledge of content, and evidence of what works" (p. 52).

Reading through the articles I reviewed for this paper did not disclose any revelations for me. Apparently I already knew what sub-skills were needed for readers to become fluent readers. What was I looking for? There was one article, by Kuhn et al. (2006) that could have the answer. The simple tenet in their plan for improving fluency was to allow additional time for reading connected text each and every day.

What Works Clearinghouse's top two interventions. The final question in this literature review was to find out what two plans were labeled the most effective for improving reading fluency by the *What Works Clearinghouse* (WWC, 2008a), and how the plans met their objectives.

I was surprised that *Reading Recovery* (RR) was deemed the most effective intervention program available to date. After reading all the articles on RR and the second place intervention program, *Ladders to Literacy* (LL), I felt as though I had stepped back in time to the whole language vs. phonics era. There were almost as many authors critical (Groff, 2004; Iversen & Tunmer, 1993; Reynolds & Wheldall, 2007) of RR as there were in favor of it (Baenen, Bernholc, Dulaney, & Banks, 1997; Bufalino, Wang, Gómez-Bellengé, & Zalud, 2007; Pinnell, Lyons, DeFord, Bryk, & Seltzer, 1994; Schwartz, 2005).

Both plans had research to support their effectiveness. LL was geared toward kindergarten and RR focused on first grade. LL concentrated on phonological skills with one-to-one direct instruction during interventions. RR also used one-to-one interventions for the students in the lowest 20th percentile of the class. Their lessons connected reading

and writing and the teacher used the RR student's responses and behaviors to scaffold the lessons each day.

The cost of RR and the time commitment for training were definite drawbacks. When one considered how long the intervention lasted, it ends up being cost effective. The price of LL was minimal and the training was affordable. I did find it curious that LL's website had changed over a period of four days. The authors' names had been rearranged on the site and *Ladders to Literacy* was now considered an *outreach program*.

Information on the web site explained the program was being used in homes as interventions for children with learning disabilities. The manual was still available so those interested could implement the strategies on their own. The site required at least 15 participants to be present before a training session would be scheduled (Notari-Skyverson et al., 2000).

Using LL proved to be effective for improving segmenting and blending skills but the carry-over did not occur. The subsequent year the LL students had fallen behind and just 1% remained caught up with the average first grader. The WWC had assigned a + 26 improvement index to *Ladders of Literacy*. "The improvement index can be interpreted as the expected change in percentile rank for an average comparison group student if the student had received the intervention" (WWC, 2008c).

RR touted 75% of its students had successfully discontinued RR within 12 to 20 weeks and a year later 67% of the successfully discontinued were reading at grade level. Reading Recovery had received a + 46 improvement index from the WWC.

One final comment about *What Works Clearinghouse*—it carries a disclaimer at the bottom of each web page that reads, "It is important to note the WWC does not endorse

particular interventions, nor does it conduct field studies. Rather, the WWC gathers available evidence on particular educational interventions and provides reviews of existing evidence against our standards" (WWC, 2008d).

Recommendations

Future research. Reviewing literature on the relationship between comprehension and fluency definitely piqued my curiosity. The prospect of declaring how fluency and comprehension are related will require many more trials, studies, and inevitably years of research. I would like to involve my very small first grade class in some type of research that would shed more light on when or if there is a change in the relationship between comprehension and fluency.

The question proposed by Näslund and Schneider (1996) could be another research project. The request they made was that research needed to be conducted to reveal how memory span, verbal processing, and decoding influence each other.

There needs to be research documenting the outcomes of a modified Reading Recovery format. A modified format could possibly accelerate students through the program faster and with a permanent positive impact. The teacher would be teaching decoding, spelling, and comprehension strategies as they applied it to their reading. It could still be on a one-to-one basis as research shows that is a powerful ratio (Allington, 2009; Cox & Hopkins, 2006; Ehri, Dreyer, Flugman, & Gross, 2007; Vadasy, Sanders, & Peyton, 2005).

Teaching practices. The result of reviewing literature for this paper has caused me to rethink my teaching methods in the area of reading fluency. I knew going into this assignment that I was looking for something that I could try with my first graders to

improve their reading fluency. I just was not certain if it would be a change in content or construct.

Kuhn et al. (2006) described an intervention plan that seemed to be exactly what I was searching for. It was not going to involve additional training on my part or a need for additional expenditure. It was to be implemented *in addition* to our normal literacy learning. The preparation for which I would be responsible involved locating short, high interest passages from the grade level a student was reading. I could utilize differentiation at this point. Homogenous small groups and individual one-to-one pairings could be formed according to the students' needs.

After the preparatory steps were completed I would implement the fluency-comprehension booster using the following steps:

1. I would preteach the new text for vocabulary and background knowledge.
2. I would read aloud the new text passage, modeling fluency and prosody, to the group.
3. The group would discuss the new text passage with my facilitating. I would continually comment on the importance of understanding passages.
4. The students would use partner reading of the new text.
5. I would lead and monitor choral reading with each respective group's passage on opposite days of the partner reading assignment.

The five steps are meant to be a mini-lesson. They are not intended to be a complete curriculum for the students. There may be students who would not even benefit from the fluency-comprehension booster if they are too far above the targeted skills. I would most likely have those students engaged in literacy activities of their choice but

in the non-fiction genre. I plan to use my knowledge of reading development and the students' individual strengths, weaknesses, and interests before determining their needs.

The results of Kuhn's et al. (2006) research showed the students using the intervention plan scored significantly higher than the control group in the measure of reading fluency and comprehension. The higher scores were reached during the winter assessment and were maintained into the spring testing schedule.

One interesting result in Eldredge's (2005) study was revealed after the word recognition testing. The students scored higher when reading the list of high frequency, irregular words compared to when reading the word list of graphophonically regular, but low frequency words. Eldredge's study (2005) supports Kuhn's et al. (2006) findings. When a reader reads more they are going to have higher scores in comprehension and word recall as well. I am looking forward to utilizing the researched methods in my own classroom.

An additional consequence of reading the many articles for this literature review is that I look forward to searching on *Prowler Database*; attempting to locate recent articles published on any topic I wish to research. I am going to need to explore a UNI alumni library membership, if they even exist.

If nothing else throughout this three-year process, I have become mindful of peer reviewed journals, quality research, and a wealth of reading theorists' theories. All of those indicators will be influencing my teaching decisions and practices in the near future.

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