Teaching Metacognitive Strategies to Improve Accuracy and Fluency When Decoding

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**Introduction**

 I have taught second grade for two years and previously taught special education before transitioning to a regular education classroom. The area I have been most interested in studying has been how to help my at-risk readers improve their fluency and accuracy to become more proficient in their basic decoding skills. Second grade is a critical year in elementary school for reading instruction. As the last year of the primary grades, kindergarten through second, this is often one of the last years students receive significant amounts of direct instruction in phonics and decoding skills. As students transition to the intermediate grades, three though five, students are expected to put their phonics knowledge to use and make the transition from “learning to read” to “reading to learn.” I have observed that students who are lacking in basic reading skills, especially the areas of decoding accuracy and fluency, struggle considerably more with comprehension than their peers (Nauclér & Magnusson, 2000).

My current reading program is what would be considered a balanced reading program. We have time devoted each day to phonics skills, comprehension strategies, vocabulary, guided reading, and independent reading. The phonics portion of the curriculum is very scripted. I use the Wilson Foundations program, which provides students with direct instruction in phonics rules and specific targeted practice in these rules. For comprehension and guided reading, I use a combination of lessons from the district’s basal reader, Houghton Mifflin, and reading strategies from the *Daily Five* and *Café* books written by Gaily Boushey and Joan Moser (2009). Throughout the course of the week, students participate in literacy activities independently, in pairs, and in groups lead by the teacher to address comprehension skills, fluency, accuracy, and vocabulary development. There are whole group lessons that all students participate in as well as small group lessons that are tailored to the reading level of students in the group.

Despite this balanced reading instruction, two students in my class, A. and J., were identified as at-risk readers based on universal benchmarking that was done in the beginning of the year. Fall benchmark is 60 words correct per minute with at least 95% accuracy. These students had slightly below average scores in reading fluency and accuracy based on the Aimsweb Reading-Curriculum Based Measure (R-CBM). This tool measures how many words correct per minute the student read and their percentage of words read correctly. A. read 57 words correct per minute with an accuracy rate of 86.4%. J. read 37 words correct per minute with an accuracy rate of 86%. Additionally, through classroom observation, I also noted that both these students had grade level comprehension skills and tended to make many visual miscues. They seemed to be more focused on getting through the text they were reading than making sure to go back and correct errors they made or to attempt to decode words they did not know. When they encountered an unknown word, they tended to make guesses based on the first letter and move on without making sure what they said made sense. A. had difficulty with letter reversals (b, d, p, q) and word reversals (saw for was). A. also mumbled and seemed to brush over longer words that would require some effort to decode. J. did not display letter or word reversals when reading but he often would not attempt words that were longer or that looked difficult. He would say the first sound or syllable and then stop and skip or mumble through the rest of the word. J. often looked to me, the teacher, for clues or hints to decode the word. The data from the benchmarking and my classroom observation made me worried. I knew from my experiences in special education that students who do not have firm foundations with decoding lack skills necessary to read and comprehend more difficult texts independently. I wanted to find a way to help my students apply their phonetic knowledge more accurately and automatically to become more proficient readers.

**Research Question**

Most commonly, metacognitive strategies, or strategies that involve thinking about your own learning process, are used to help students improve their comprehension (Swanson & De La Paz, 1998). I knew that the students I was working with also needed to begin thinking about their reading process and how to quickly and accurately apply their knowledge of phonics and to go back and correct mistakes they had made. I also knew that with students who struggled with phonics, they needed to be given repeated opportunities to practice skills they had learned to help them learn to use them quickly and automatically. Based on this, I decided to focus on two questions: *How does instruction in metacognitive strategies help students become aware of their reading accuracy and fluency? How does instruction in metacognitive strategies and the use of repeated reading exercises help students apply phonics skills when reading grade level texts as measured by oral reading fluency?*

**Rationale**

**Fluency and accuracy as indicators of reading success**

Fluency is the rate at which a student reads. However, the rate at which a student reads is not the only important factor in reading well. Accuracy, or the percentage of words read correctly, is also important. Fluency and accuracy are measures of students’ application of phonics skills, or how efficiently they can decode words. Recent trends in the field of education focus exclusively on rate of reading as a predictor of reading success. This is a much too simple explanation for the importance of developing fluency. Pickulski and Chard (2005) stated:

A surface view of fluency leads to practices such as simply urging students to read faster. On the other hand, a deep construct views fluency far more broadly as a part of a developmental process of building decoding skills that will form a bridge to reading comprehension. (p.511)

It is important to consider the process of reading and how that is directly related to fluency and oral reading rate. Students read to make meaning of text they have in front of them. But in order to create meaning from text, they need to be able to efficiently and automatically decode words. If readers cannot decode words efficiently and automatically, they do not have the mental capacity to construct meaning from their text. The brain must switch between the two activities, decoding and comprehension, and as a result, reading becomes more labor intensive and difficult than if one of these processes, decoding, was automatic (LaBerge and Samuels, 1974).

It takes time and practice for readers to become fluent. According to Ehri (2005), there are four ways to read words. Decoding, or sounding out and blending different sounds to form a complete word; analogizing, which is using known words to figure out unknown words, and prediction which is using context clues to guess at unfamiliar words. All are strategies to help students decode new, unknown words. The fourth way, reading words by memory, is used only when students read words that they have seen before and are familiar with. As students learn to read, they pass through phases of development in which they become increasingly skilled at decoding, analogizing, predicting and reading words from memory. Students are more quickly and accurately able to segment and blend larger chunks of letters and units that make up words. For example, early readers may need to blend each letter of the word “ball” to sound it out while an older reader may know that word from memory and can use it to sound out longer and more complex words. Words like “baseball” can be broken down into syllables rather than sounding out each individual phoneme. If students are struggling to read words and word parts quickly and correctly, they spend a significant amount of their mental energy focusing only on the decoding aspects of reading and comprehension is lost.

 **Repeated reading as a tool to improve reading accuracy and fluency**

 Repeated reading is considered a research based reading practice that helps non-fluent readers increase their automaticity, fluency and accuracy when reading out loud. While there have been numerous research articles that show the benefits of repeated reading activities, the delivery use of repeated reading instruction mainly follow the same basic format. For example, Herman (1985) worked with eight at risk students. She allowed each student to pick a passage and had them read it while she recorded their oral reading rate. Then the students practiced the passage several times and were tested again on their oral reading rate. The students were told the purpose of this instruction, to help improve their reading accuracy and fluency. The results of the study showed that not only did the students improve on each particular passage as they practiced it, but over the length of the study, the initial miscues made and rate of reading in each new passage also improved. Based on the success of this study, I thought that repeated rereading activities would be appropriate for my students to help build their fluency and accuracy.

**Metacognitive strategies to improve decoding**

Metacognitive strategies are the use of practices that help students think about their own learning. Traditionally, metacognitive strategies are used to help students improve their reading comprehension (Swanson & De La Paz, 1998). I wanted to help my students become more self-aware and engaged when they were decoding. Both A. and J. tended to rush through their texts and skip over or mumble through words they were not sure of. They did not stop to fix any mistakes. I knew there had to be something I could add to their reading instruction to help them think about their own accuracy when they were reading. As early as 1988, Gaskins, Downer, Anderson, Cunningham, Gaskins and Schommer, used a metacognitive approach to phonics instruction. They designed a program that showed students patterns in the English language and helped them to use this knowledge to decode unknown words. Their instruction was implicit because they reasoned that at-risk readers did not discover these patterns on their own. At-risk readers often treated each new word as completely unknown, rather than looking for patterns or known parts, which their more skilled peers seemed to do automatically. Instruction was particularly focused on why the students were being taught to look for patterns when reading and how to compare and contrast unknown words to words the student already knew. While this program was successful, I knew that I did not have to resources or time to implement the program described by Gaskins, et.al. (1988). I wanted to incorporate the broader idea of thinking metacognitively about decoding into my instruction.

 Ferraro, Doheny and Marcell’s (2009) article *A Trip to the Fluency Farm: Corralling Decoding, Fluency and Comprehension Strategies to Enhance Metacognition in Primary Students* gave me ideas to incorporate metacognitive strategies into my phonics instruction*.* These action research teachers described a reading program where they encouraged students to use “fix up” strategies when there was a break down in either decoding or comprehension while reading. The fun characters, like Dwayne the Decoding Duck, developed by the researchers encouraged students to ask themselves questions like, “Did that make sense? Did that sound right?” when students encountered unknown or difficult words. This article reminded me of the Daily 5 program of literacy instruction that was currently being implemented as part of my school wide reading program (Boushey and Moser, 2006). The Daily 5 program encourages students to ask “Does it look right? Does it sound right? Does it make sense?” when they read unknown words. The similarities between the article and the program I already had in place made me decided to revisit some of the strategies taught in the Daily 5 program to aid in metacognition and teach them explicitly to A. and J. to use when decoding and they get stuck on unknown words.

**The Teacher Research Project**

Based on the research I studied, I designed an instructional plan to help A. and J. decode more accurately, read more fluently and to help them begin thinking metacognitively about their reading.  A. and J. were identified as at-risk students based on the reading benchmark for oral reading fluency given school wide at the beginning of the year. They read below 60 words correct per minute and had an accuracy rate of less than 95%. A. read 57 words correct per minute with an accuracy rate of 86.4%. J. read 37 words correct per minute with an accuracy rate of 86%. Additionally, in my “digging deeper” assessments, tests designed to give a teacher more information and insight into reading difficulties, both students showed deficits in phonics and decoding skills, particularly with vowel patterns, blends, blending sounds and substituting sounds. Based on the results of these tests, I decided to create and intervention group within my classroom to work on building their reading accuracy and fluency. I did not include any other students in this group because based on their performance on the benchmark screening for oral reading fluency, they were not identified as at-risk.

 I chose to use a blended approach to my instruction. I knew I wanted to use repeated reading activities because they had a proven record of helping students improve reading fluency. I also wanted to use activities to help the students improve their self-monitoring skills of their reading accuracy, because in order for them to succeed independently, they need to be able to monitor their own decoding skills. Finally, as a more personal goal, I wanted to make the activities I did with the students engaging and fun. Reading intervention is not always the most exciting lesson to be involved with and I didn’t want my struggling readers to dread working on their fluency. I looked into different methods of running repeated reading lessons and initially wanted to use reader’s theatre scripts. Raninski and Young (2009) had great success with the use of scripts to help improve student fluency. They explained that reader’s theatere was a more authentic approach to fluency instruction because it focused on performance texts. Students were not being taught to read fast for the sake of increasing their words correct per minute. They had to read in a way that their audience could understand them and make meaning from what they were listening to. The goal was to give an engaging performance that was pleasant to listen to rather than just to read as fast as possible. This idea resonated with me because I did not want to fall into the trap of teaching students to read so fast that they were ignoring comprehension. I did not want my students to believe that reading fast was the only way to be considered a good reader. I wanted them to improve their accuracy and automaticity of word recognition to ultimately improve their comprehension, not ignore it.

However, I soon realized that finding reader’s theater scripts for two students was challenging. I also wanted to use short pieces that were easy to practice repeatedly and the scripts were often several pages long. I continued to search for the right type text that would give my students the fluency practice they desperately needed that was also engaging and fun to read. Then, I found my answer. After reading Wilfong’s (2008) article, *Building Fluency, Word-Recognition Ability, and Confidence in Struggling Readers: The Poetry Academy*, I knew that poetry was the right type of text to use. Poems were generally shorter than other types of text, could be practiced repeatedly, and were also good for performing in front of an audience.

Each week, the A. and J. picked a poem that they would perform for another class, their teacher from last year who they had a good relationship with. The poems were chosen from the website www.gigglepoetry.com, which contains humorous poems written by popular children’s authors. While poetry can be a difficult genre to read, I pre-selected poems for them to choose from that followed easy to read format, with more sentences and phrases rather than figurative lines and creative formats. Since motivation toward reading is sometimes lacking in at risk students, these comical poems provided high interest reading material that engaged my students and reinforced their desire to participate in the lessons. Additionally, A. and J. are confident students and had a good relationship with their first grade teacher. I initially gave them the option of performing their poem to only me, to our class or to their first grade teacher’s class and they chose where they would like to go.  Each week, they chose to perform for their old teacher. They liked going down to see her and that was an incentive and motivation to continue with the lessons. Both students liked the opportunity to perform for younger students and visit with their first grade teacher.

Throughout the week, the students practiced their poem independently at home and with me in a small group. When working with me, we talked about metacognitive strategies they could use to help them decode accurately. I chose my strategies from the *Daily 5* and *Café* books I used during my research (Boushey and Moser, 2006, 2009). Some of the strategies we discussed were thinking about if the sounds spoken match the letters in the words, helping students to chunk longer words into parts known and going back and rereading if what was said did not make sense. In order to make sure students were having an opportunity to practice their metacognitive strategies, A. and J. also participated in word sort activities. The students were given word flashcards they had to sort each week based on a set of criteria, usually long and short vowel sounds, as that was an area that showed up as deficient during my initial assessments. As it was described in Gaskins, et al. (1988), the A. and J. had to compare and contrast the different sound in the words to determine where to sort them.

**Methodology**

Throughout these sessions, I made notes on miscues to see if they continued to make visual miscues (like saying “things” for “this”) or if they were starting to make more meaning miscues (like saying “fall” for “autumn”). During these sessions I also tried to jot down my feelings about how the lessons are going and what my impressions of the events in my classroom were. I asked the students questions to learn more about what they think about their reading. I have also noticed that the students made comments during our sessions that showed me that they were thinking about what they are reading, such as “Wait, that’s not right!” before they went back and tried again the word again. I recorded these comments as well.  Each week I also administered a Reading –Curriculum Based Measure (R-CBM), which measured fluency and accuracy, because I am required to do so by my school for at-risk readers who are involved in an intervention program. I gave the Phonics Test by Ekwall and Shanker (2010), which broke down student performance on skills in different areas of phonics at both the beginning and end of the intervention.

I also decided to give the Elementary Reading Attitude Survey (McKenna and Kear, 1990) to my entire class. I looked at the responses of A. and J. and compared them to the rest of my class. I wanted to gain some insight into their feelings toward reading and how that may have impacted their performance in the classroom.  I repeated this survey with A. and J. to compare their initial feelings toward their reading abilities at the beginning and the end of the intervention period. I developed a set of questions to ask A. and J. throughout our sessions to see if their feelings or attitudes toward reading changed over the course of this study. I asked them three questions: *What do you think about when you read? What do you do when you come to a word you don’t know? Can you tell a difference in your reading from the before we started reading poetry and now?*

When analyzing the data I collected I looked for patterns that student fluency and accuracy were improving. I wanted to determine if their words correct per minute (WCPM) increased and if their accuracy, as measured by percent of words correct to total words read, also increased. I also chose to code my surveys, field notes and interviews to look for patterns that students were thinking about their reading process and using metacognitive strategies. I looked at the Elementary Reading Attitude Survey to see how the students’ perceptions of themselves may have impacted their reading or changed throughout the course of the intervention.

**Findings**

 The results of this study were encouraging. Both students increased their accuracy and showed evidence of using metacognitive strategies when decoding. Fluency results showed inconsistent progress. Additionally, the Elementary Reading Attitude Survey (KcKenna & Kear, 1990) provided insight into the students’ feelings toward reading.

**Accuracy**

 Both A. and J. showed improvement in their overall accuracy throughout the course of the study. While it fluctuated from week to week, see Table 1, the average accuracy score from the duration of the study showed significant improvement from the students’ benchmark scores at the beginning of the year. Additionally the results from the Ekwall Shanker Phonics Test (2010) showed improvements in terms of accuracy in all areas tested, see Table 2. This table showed the raw score for each subtest of the number of items on the test the student answered correctly. A. increased areas of mastery from one subtest on the pretest to three on the posttest. J. increased areas of mastery from four subtests on the pretest to five subtests on the posttest. Subtests that students had shown mastery in the pretest were not assessed in the posttest.

Table 1

Accuracy Rates from Aimsweb Reading Curriculum Based Measure

|  |  |  |
| --- | --- | --- |
|  | A. | J. |
| Benchmark:  | 86.4% | 86.0% |
| Week 1 | 91.3% | 98.5% |
| Week 2 | 95.9% | 88.3% |
| Week 3 | 90.1% | 92% |
| Week 4 | 93.5% | 97.7% |
| Week 5 | 96.6% | 96.5% |
| Week 6 | 92.0% | 94.5% |
| Week 7  | 85.4% | 95.3% |
| Overall Average  | 91.7% |  |

Table 2

Raw Scores from the Ekwall/Shanker Phonics Test

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subtest | A. Pretest | A. Posttest | J. Pretest | J. Posttest |
| Application of Phonics Skills | 28 | 29 | 19 | 31 |
| Initial Consonants | 10\* | -- | 10\* | -- |
| Initial Blends an Digraphs | 8 | 8 | 10\* | -- |
| Ending Sounds | 7 | 8\* | 10\* | -- |
| Vowels | 8 | 10\* | 9\* | -- |
| Phonograms | 6 | 8 | 7 | 8 |
| Blending | 5 | 6 | 7 | 8 |
| Substitution | 14 | 12 | 15 | 23\* |
| Vowel Pronunciation | 4 | 6 | 5 | 8 |

*Note.* \* indicates mastery achieved in the subtest

The repeated reading activities that I used with the students helped them to read a higher percentage of the words correct on the poems. Table 3 shows the miscue count for the initial and final readings of each of the poems used during our sessions. On weeks one, five and seven, final miscue counts were not collected. Classroom events on those days ran over the expected time and as a result, I was not able to collect the data. The data from this study, Table 3, recreated the results from Herman’s (1985) study. Both studies showed that students became more accurate on each passage as they practiced throughout the week. Additionally initial miscues from each new passage decreased over the course of the study.

Table 3

Miscue Count For Initial and Final Poetry Readings

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Week | A. Initial Reading | A. Final Reading  | J. Initial Reading | J. Final Reading |
| 1 | 6 | --\* | 8 | --\* |
| 2 | 7 | 3 | 12 | 3 |
| 3 | 9 | 7 | 9 | 7 |
| 4 | 7 | 1 | 5 | 1 |
| 5 | 10 | --\* | 8 | --\* |
| 6 | 5 | 2 | 4 | 2 |
| 7 | 4 | --\* | 4 | --\* |

*Note*. \* data not available

**Fluency**

A. and J.’s fluency progress was measured by words correct per minute (WCPM). However the data in this area fluctuated over the course of the study, see Table 4. A. did not make any significant increases or decreases from his benchmark of 57 WCPM. He made an initial improvement in weeks 1 and 2, however after that he was unable to show a clear pattern of growth. One possible reason for these findings is that A. was identified as a student in need of special education services due to a learning disability in reading during week 7. He showed significant deficits in the area of phonemic awareness and phonics. In general, students with learning disabilities progress at a rate slower than students without disabilities and their progress may be very inconsistent.

J. also had inconsistent data in regards to fluency, see Table 4. J.’s benchmark was 37 WCPM. He showed consistent improvement up to week 4 and reached a peak performance of 85 WCPM. After that, his fluency rate decreased, however his accuracy rate continued to hold at a consistent rate. One reasons for this finding, as well as a possible explanation for A.’s results is that as the students learned and practiced using metacognitive skills, they were more careful and engaged in the decoding process. In sessions we had discussed at length how to go back and fix mistakes and to really think about what they were reading. This increased attention to what they were reading may have slowed down their fluency rates.

Table 4

Oral Reading Fluency Rate Measured in Words Correct Per Minute (WCPM)

|  |  |  |
| --- | --- | --- |
|  | A. WCPM | J. WCPM |
| Benchmark | 57 | 37 |
| Week 1 | 53 | 69 |
| Week 2 | 71 | 53 |
| Week 3 | 55 | 66 |
| Week 4 | 58 | 85 |
| Week 5 | 57 | 84 |
| Week 6 | 46 | 70 |
| Week 7 | 53 | 62 |

**Metacognitive Strategies**

 My field notes and interviews with A. and J. show that over the course of the study they were using metacognitive strategies taught to help them decode more accurately. As early as week three in the study, both A. and J. were making statements that showed they were recognizing when they misread a word. Both students would read and after making a miscue would say statements such as, “That doesn’t sound right!” before going back to try to correct errors. As the sessions progressed, they were able to recognize their mistakes easily. However, they continued to need coaching and assistance in breaking down word parts to decode unknown words. In the final interview, both students were able to identify metacognitive strategies they used to correct their errors. Strategies they named were: sound it out, look at the word to find parts I know, try not to guess at it, tap it out, and if it doesn’t make sense, go back and try it again. Based on my field notes, J. showed the most evidence of using these strategies during the reading process. He often made statements like “I know this [word part] is ing” and then used that knowledge to figure out the word. He took is time and paid noticeably more attention to his accuracy as the sessions progressed.

**Other Findings**

While implementing this research project, I also explored how these two struggling readers felt about reading academically and reading for recreation. I administered the Elementary Reading Attitude Survey (ERAS) (McKenna and Kear, 1990) and asked interview questions to gauge their attitudes toward reading recreationally and academically. The ERAS showed interesting results. I gave the ERAS at the beginning of the project and then again over the final week, see Table 5. A. showed a decreased in overall reading attitude while J. showed and overall increase in reading attitude. A. had initially scored in the 99th percentile for reading attitude, indicating that he felt extremely happy about all of the statements in the survey. I think that this may have been a case where A. was telling me answers that he thought I, the teacher, wanted to hear. However, in his final survey he still scored quite high, in the 84th percentile for the full scale, combined score of recreational and academic reading. The results of this did not surprise me however, because A. is generally a very happy, positive child about all activities we do in class. J.’s results from the ERAS were encouraging. He increased in percentile for recreational, academic and overall attitude toward reading. Perhaps the more positive attitude resulted from increased ease with reading from learning new skills to make decoding easier.

Table 4

Elementary Reading Attitude Survey Percentiles

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Student | Recreational Reading Pretest | Recreational Reading Posttest | Academic Reading Pretest | Academic Reading Posttest | Full Scale Pretest | Full Scale Posttest |
| A. | 99 | 74 | 99 | 89 | 99 | 84 |
| J. | 6 | 15 | 27 | 57 | 11 | 35 |

**Discussion**

 This project has allowed me to explore the questions: *How does instruction in metacognitive strategies help students become aware of their reading accuracy and fluency? How does instruction in metacognitive strategies and the use of repeated reading exercises help students apply phonics skills when reading grade level texts as measured by oral reading fluency?* Metacognitive strategies do help students become aware of their reading accuracy and fluency. Both students I worked with showed increased evidence over time of using these types of strategies to help them read more accurately. While their fluency did not increase as much or as consistently as I had hoped, that may be due in part to their increased attention to their decoding while reading. My data showed that repeated readings, used in conjunction with instruction in metacognitive strategies do help students apply phonics skills more accurately when reading. I need to continue to teach these strategies not only to at risk students, but all students to help them become more accurate readers. As they become more accurate and their decoding skills become more automatic, I believe that oral reading fluency will increase for both A. and J. Had there been more time to extend this study, I think that the fluency data would have shown more positive results.

Other teachers who have at risk students should consider incorporating both instruction in metacognitive strategies and repeated reading activities into their curriculum. Students who are in the primary grades are capable of developing self –regulation and monitoring skills with regards to reading. Repeated reading activities are a tried and true method of helping students to increase fluency and accuracy. They should be used to help all students improve fluency but teachers should be mindful of making this an engaging and enjoyable activity by choosing appropriate texts. The use of fun and engaging texts, like poems found on [www.gigglepoetry.com](http://www.gigglepoetry.com), may help increase student motivation and attitudes toward reading.

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