

## Reading: Effort, Choice, Vocabulary, and Reinforcement

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### HANDOUT

## **I. Reading Comprehension Rate:**

Brief reading rate measures are commonly used to measure students' overall reading skills in Grades 2 and up. There are a variety of measures, with numerous anachronisms. Early on, we used to call these CBM measures. As we now download the reading probes from various sites, they are probably better referred to as brief reading rate measures.

1. ORF = WCPM = # words correct/seconds to read. Often converted to per minute.
2. RCR = % comp question correct/seconds to read. Can be converted to per minute.
3. MAZE = correct words circled/seconds to read
4. Highlight punctuation = punctuation circled/seconds to read

I used CBM measure ORF to measure my students with EBD reading progress. We had challenges.

1. Making the probes: so the teacher divided up the curriculum and made reading probes from the curricula. This was not easy since the text often contained pictures, poems, songs, and very few words on a page. It became increasingly difficult to find pages with enough words that did not contain a lot of unusual proper names.

Text-test overlap studies: Research on standardized reading assessment showed matching words in test with words in curriculum effected test scores. Higher the overlap, the higher the scores.

Later, it was found that this had less of an impact on the ORF or words correct per minute. Why?

I DO NOT KNOW THE ANSWER, BUT I HAVE A SUSPICION.

How do each of these brief reading measures differ: it is the numerator. The denominator for each contains a measure of reading speed. Perhaps a measure of reading speed is less susceptible to test-text overlap. As standardized reading measures begin to include brief rates measures, they too may be less susceptible to test-text overlap.

Major point – all brief reading rate measures are good indicators of general reading skill development because they include a measure of reading speed embedded within the measure. IT IS NOT THE NUMERATOR.

## II. Reading Speed is Related to Choosing to Read:

Chuckles per minute, Belly laughs per minute.

Students are more likely to choose to read when **reinforcement** for reading is

**a) More immediate, b) Higher quality, c) More frequent (Higher rate).**

Students more likely to choose to read when reading takes less effort (**time**)

**Mathew Effect** – those who read with a high rates of comprehension are more likely to choose to read, which causes them to become better readers. Those who read slowly are less likely to choose to read so they fall farther behind.

### Reference for Many Reading Interventions and my Description of Chuckles per Minute

Daly, E. J., Neugebauer, S., Chafouleas, S., & Skinner, C. H. (2015, January). *Interventions for Reading Problems: Designing and Evaluating Effective Strategies, Second Edition*. New York, NY: The Guilford Press.

### References for Reading Comprehension Rates

Remember, I loved this measure but then found it was not so good because almost all of its ability to predict general reading skill development was based on the measure of reading speed embedded within it.

Skinner, C. H., Robinson, D. H., **Adamson, K. L., Atchison, L. A., & Woodward, J. R.** (1998). The effects of different listening-while-reading rates on comprehension in secondary students with reading deficits. *Special Services in the Schools*, 12, 115-128.

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- Ridge, A. D., & Skinner, C. H.** (2011). Using the TELLS pre-reading procedure to enhance comprehension levels and rates in secondary students. *Psychology in the Schools*, 48, 46-58.
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- Hale, A. D., Skinner, C. H., Wilhoit, B., Ciancio, D., & Morrow, J. A.** (2012). Variance in broad reading accounted for by measures of reading speed embedded within Maze and comprehension rate measures. *Journal of Psycho-educational Assessment*, 30, 539-554.
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### III. Getting Students to Choose to Read – 2 IGBR Studies.

**AR programs.** Love them because they allow students to choose what to read. Choice may enhance probability that they do the wanted behavior and decrease inappropriate behaviors. What could be better?!

#### Concerns:

1. In too many classes, it is just not working (not passing quizzes).
2. Law of Effort – will they choose the easiest (not grade level material)?

### **Applying Interdependent Group Bonus rewards:**

1. Found it helped but effects were inconsistent and tended to dwindle
2. Effects were best with low quiz passers.
3. Little evidence that it caused them to read easier material

How do we increase effectiveness?

Strengthen rewards – **I would probably try to enhance immediacy.**

### **References for Group Contingencies and Reading Comprehension (AP program)**

**Sharp, S., & Skinner, C. H.** (2004). Using interdependent group contingencies with randomly selected criteria and paired reading to enhance class-wide reading performance. *Journal of Applied School Psychology, 20*(2), 29-46.

**Pappas, D. N., Skinner, C. H., & Skinner, A. L.,** (2010). Supplementing accelerated reading with class-wide interdependent group-oriented contingencies. *Psychology in the Schools, 47*, 887-902.

## **IV. Enhance Comprehension: Need a purpose or reason to read.**

ART of Reading – previewing was fine (e.g., scan and write three questions that you think may be answered). However, previewing procedures were only effective when after students finished, they discussed their questions, answers, and passages with their elbow partner.

Why? Reason to preview and read – discussion with elbow partner.

### **Reference for Why Previewing May Not Be Enough**

McCallum, R. S. **Krohn, K. R.,** Skinner, C. H., **Mounger, A., Hopkins, M.,** Waller, S., & Polite, F. (2011). Improving reading comprehension of at-risk high school students: The ART of reading program. *Psychology in the Schools, 48*, 78-86.

## **V. Enhance Comprehension: PRE-TEACH DIFFICULT WORDS**

Pre-teaching vocabulary and difficult words.

Note –this process can also get children more motivated to read – peak their curiosity.

Difficult Names: **Laura Engels Wilder** (probes from DIBELS or AIMES WEB) always yielded lower scores.

What we found: unusual foreign names significantly reduced comprehension and comprehension rates. But mere pre-teaching with pictures fixed the problem (read the name). Definition was merely a picture of boy, girl, etc. Students appeared to be more excited to read the passage because of the pre-teaching (interested in learning about children from other countries?)

Take away from this study – pre-teaching some vocabulary and word reading may be very effective in enhancing comprehension. Now when reading, they find it to take less effort, and results in more powerful reinforcement.

#### **Reference for Pre-teaching and Difficult Words**

Note – this dissertation contains three studies. We are running more as we speak. Regardless, we are in the process of submitting.

**Taylor, K.,** (2018, April). *Effects of difficult-to-read materials on learning*. Dissertation, The University of Tennessee

## **VI. TEACHING WHOLE WORDS TO STUDENT WITH DIABILITY AND LEARNING RATES OR LEARNING SPEED.**

When do we switch from phonemics to whole word? I believe that we may be getting at what is sometimes referred to as dyslexia. But, I do not know the answer to this question. I think we need to know the answer to this question.

A computer science Ph.D. student took a couple of classes and we worked together on some projects. He told me that yes he could build me a sight words reading program, but I had to specify everything ahead of time. In other words, I could not change my mind regarding what I wanted after he started.

Soon, I realized that I did not know what I wanted.

Regardless – I found that I could, in fact, teach sight words to students using a computer flashcard program, but I did not know how long I should give them to respond.

It was found, generally, that 1s was superior.

It caused the most rapid learning (fast pace, more learning trials per unit of time, more trials cause more learning).

Also, 1s was more rapid pacing, which may enhance attention.

Despite these findings, I recently began investigating with self-determined intervals. Have not yet compared to 1s.

#### **References for Computer Based Sight-word Reading Flashcard**

These two article should allow you to build a program

**Hopkins, M. B., Hilton, A. N., & Skinner, C. H.** (2011). Implementation guidelines: How to design a computer-based sight-word reading system using Microsoft® PowerPoint®. *Journal of Evidence-Based Practices in the Schools*, 12, 219-222.

**Cazzell, S., Skinner, C., & Taylor, K.** (published July 2017, cite date is 2015 - pub delayed). Implementing computer flashcard reading with self-determined response intervals. *Journal of Evidence-Based Practice in the Schools*, 16(1), 95-100.

These are the studies

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- Yaw, J. S., Skinner, C. H., Parkhurst, J., Taylor, C. M., Booher, J. & Chambers, K.** (2011). Extending research on a computer-based sight-word reading intervention to a student with Autism. *Journal of Behavioral Education*, 20, 44-55.
- Yaw, J. S., Skinner, C. H., Orsega, M., Parkhurst, J., Chambers, K., & Booher, J.** (2012). Evaluating a computer-based sight-word reading intervention in a student with intellectual disabilities. *Journal of Applied School Psychology*, 28, 354-366.
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- Forbes, B. E., Skinner, C. H., Black, M. P., Yaw, J. S., Booher, J., & Delisle, J.** (2013). Learning rates and known-to-known flash-card ratios: Comparing effectiveness while holding instructional time constant. *Journal of Applied Behavior Analysis*, 46, 832-837.
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- Cazzell, S., Skinner, C., Taylor, K., McCurdy, M., Ciancio, D., Cihak, D., Skinner, A., & Moore, T.** (under review). Evaluating and comparing computer-based sight word in elementary students with Intellectual Disability: Self-determined versus fixed response intervals.
- Black, M. P., Skinner, C. H., Forbes, B. E., McCurdy, M., Coleman, M. B., Davis, K., & Gettelfinger, M.** (2016, January). Cumulative instructional time and relative effectiveness conclusions: Extending research on response intervals, learning, and measurement scale. *Behavior Analysis in Practice*, 9(10), 58-62. DOI: 10.1007/s40617-016-0114-3

### References on Learning Speed

In addition to these articles consider searching authors Cates and Poncy, my former students. In particular, see special issue of *Psychology in the Schools* (47) 2<sup>nd</sup> issue.

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**This article reviews math studies on learning rates and should make you think twice about meta-analysis.**

- Poncy, B. C., Solomon, G. E., Duhon G. J., Skinner, C. H., Moore, K., & Simons, S.** (2015, October). An analysis of learning rate and curricular scope: Caution when choosing academic interventions based on aggregated outcomes. *School Psychology Review*, 44, 289-305.

**This one reviewing reading studies and should make you think twice about meta-analysis.**

**Warning - the stats are a bit daunting.**

- Solomon, B. G., Poncy, B. C., Caravello, D. J., & Schweiger, E.M. (2017). Examining learning rates in the evaluation of academic interventions that target reading fluency. *Psychology in the Schools*, 1, 1-14.