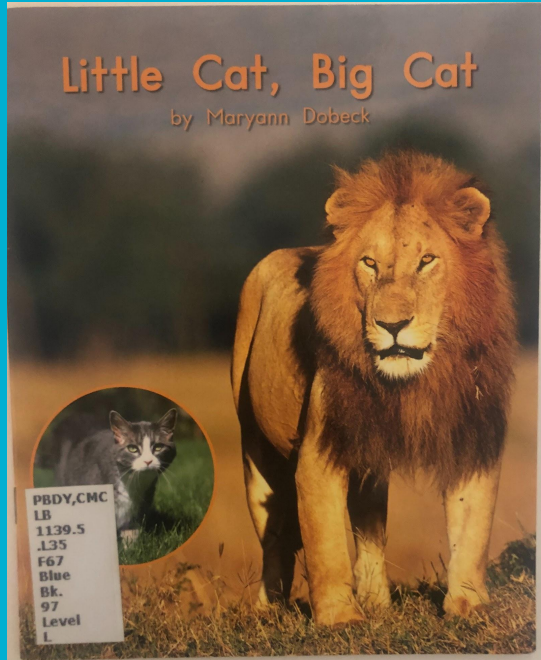# The Effects of Prior Knowledge on Reading Level

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Why this topic?

First, I began exploring the Reading Clinic Model with Victor. We read…

Victor's Reading Level at beginning of project: **L**
Little Cat, Big Cat Reading Level: **L**

Learning Objective: At the end of this lesson, the student will be able to articulate the purpose of a glossary and recall how specific words from the text's glossary helped him better comprehend a specific portion of the text.

Findings:
How does the glossary help us?
Victor's Answer:
· "Helped understand that cats can be good pets"

Follow up question: What were those three words we read from the glossary at beginning?
Victor's Answer:
· Victor remembered all 3 words for recall (alike, purr and pounce)
· Victor did not remember when it talked about pounce- but he remembered the definition
· Remembered when the text used the word "purr" and could recall key details

Why this topic?

Next, due to my findings from Victor and I's first reading, we read...
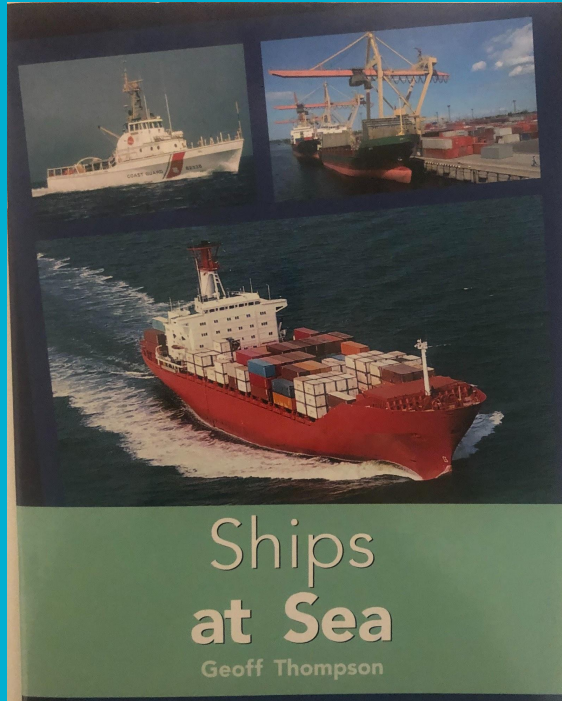
Victor's Reading Level at beginning of project: **L**
Ships at Sea Reading Level: **M**

Learning Objective (remained the same):At the end of this lesson, the student will be able to articulate the purpose of a glossary and recall how specific words from the text's glossary helped him better comprehend a specific portion of the text.

Findings:
How does the glossary help us better understand parts of this text?
· "It helps me because it has the definition in the glossary and if you didn't know what it meant before you can now know what it means."

Follow up question: What were those three words we read from the glossary at beginning and where are some places our knowledge of these three words helped you better understand what the author was saying?
· Propeller- hovercraft
· Containers- cargo ships- pointed to the word on the page
· Runway- pointed to on page- runways are for taking off and landing

What Next?

There are two possible reasons for the discrepancy in outcomes of Victor's understanding of the glossary from our first reading to our second...
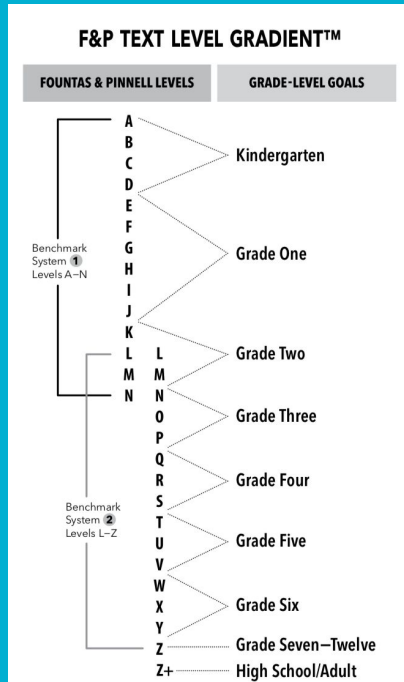
1. This is the second time Victor and I explored the purpose of a glossary and how to learn more about new vocab words from it
2. After our first reading together, I found out that Victor has an interest in ships, specifically the Titanic. I wondered if Victor's comprehension improved due to his interest and prior knowledge of ships.

I decided to explore possibility **#2**

The question I explored...

—

Does a student' prior knowledge on a particular subject allow them to read texts on that subject above their designated reading level?

Background on F&P Reading Level Benchmark Assessment

For more information on Fountas & Pinnell Benchmark Assessments:

http://assets.pearsoncanadaschool.com/asset_mgr/current/201626/BAS_3rdEdSample.pdf

As Tompkins (2005) states...

THE READING PROCESS

Reading is a transactive process in which a reader negotiates meaning in order to comprehend, or create an interpretation. During reading, the meaning does not go from the page to the reader. Instead, reading involves a complex negotiation between the text and the reader that is shaped by many factors: the reader's knowledge about the topic; the reader's purpose for reading; the language community the reader belongs to and how closely that language matches the language used in the text; the reader's culturally based expectations about reading; and the reader's expectations about reading based on his or her previous experiences (Weaver, 1994).

Tompkins, 2005, pg. 107

According to the research...

According to Ken Goodman's whole language approach (1986), "readers construct meaning during reading. They use their prior learning and experience to make sense of texts" p. 38

For readers to make meaning from what they are reading, their schema must be activated (Tompkins, 2005).

Reading comprehension according to Shanahan (2010) is "bringing one's capacities, abilities, knowledge and experiences to bear on what he or she is reading. These personal characteristics also may affect the comprehension process" (p. 5)

Oral Reading in Titanic vs. Balloon Readings

Victor's Reading Level Now: **M**
Finding the Titanic Level: **Q**

Oral Reading Findings:
- Accuracy Rate: **96%**

- Less overall errors- both semantic and visual
- Split "shipwreck" into two different words- recognized both separately from prior knowledge and was able to make a connection to this new context
- Substituted "never" for "even," which semantically made sense
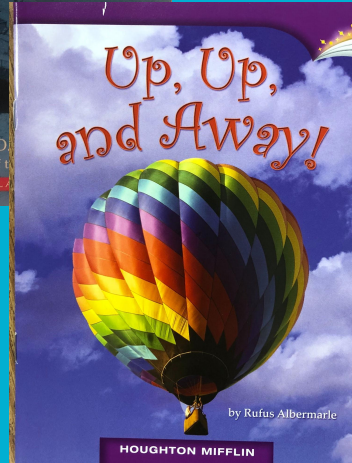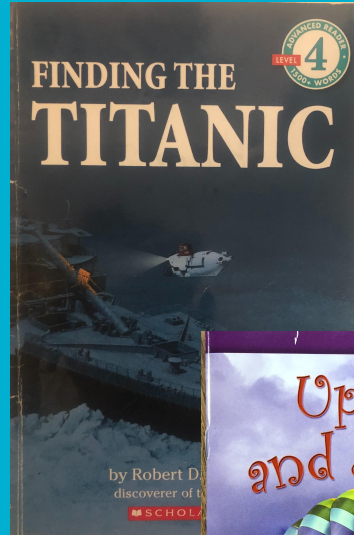
Victor's Reading Level Now: **M**
Up, Up and Away Level: **Q**

Oral Reading Findings:
- Accuracy Rate: **87%**

- Made more substitutions based on visual/graphic vues
  - Attitude for altitude
  - Experiment for equipment
  - Promptly for propane
  - Held for heated

Many of these words are very specific to hot air balloons and not in Victor's schema

FINDING THE TITANIC
LEVEL 4
by Robert D.
discoverer of t
SCHOLASTIC

Up, Up, and Away!
by Rufus Albermarle
HOUGHTON MIFFLIN

Runnings Records

CHAPTER ONE

August 25, 1985

I went to the control center of our ship. "Have you seen anything yet?" I asked my team. I looked at the video screen. Nothing had appeared.

We were searching for the *Titanic* — the most famous of all shipwrecks. The *Titanic* was once the largest ship in the world. It had grand rooms. It seemed like a floating palace. Some people even said the ship was unsinkable.

But on its first voyage in April 1912, the *Titanic* hit an iceberg and sank. It was carrying over two thousand people. Many of them died when the ship went down.

I watch as we lower *Argo*, our underwater camera sled.

Modern Balloons

October 10, 1960, was the official birth date of the modern hot-air balloon. A company in Nebraska launched a balloon made of a very tough nylon. The air in the balloon was heated by a burner fueled by propane gas. The burner sat in a wicker basket under the balloon. This propane-fueled balloon could reach a high altitude and stay in the air for hours.

Today's balloons are pretty much unchanged, although some balloon makers now use taffeta, a fabric that's even tougher than nylon. They also coat balloons with a spray that can stand up to very high temperatures. The baskets are still made of wicker, and the equipment inside is still the basic propane tanks and burners.

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Connection to Research

In a study in 2011, Priebe, Keenan & Miller discovered that prior knowledge does infact affect word identification skills in poor readers*. Poor readers with prior knowledge made fewer errors than poor readers without prior knowledge.

They discovered that prior knowledge of the topic allowed poor readers* to make less errors that were simply graphically similar. In contrast, poor readers without prior knowledge relied more on visual cues to help determine the meaning of unknown words in the text.

According to Priebe, Keenan & Miller (2011), prior knowledge appears to serve a compensatory function for poor readers, allowing them to utilize the additional semantic information to help determine the words identity" p. 10.

> A possible mechanism underlying prior knowledge facilitation in constraint satisfaction is that it may allow poor readers to gain new decoding skills. For instance, having knowledge that allows one to anticipate the word *climbed* in "*Jack and Jill climbed up…*" permits the phonological representation of *climbed* to get activated more quickly than it would from the orthography alone since the mapping involves the relatively low frequency silent *b*. Having

Comprehension in Titanic vs. Balloon Readings

Victor's Reading Level Now: **M**
Finding the Titanic Level: **Q**

Comprehension Findings:
- Victor recalled significantly more details without looking back through the text such as the date the Titanic hit the iceberg and how large it was in comparison to a Megladon shark
- Victor made references to his personal life and prior experience watching YouTube videos about the Titanic in his free time, sharing various insights such as the speed the Titanic hit the iceberg and the implications of that
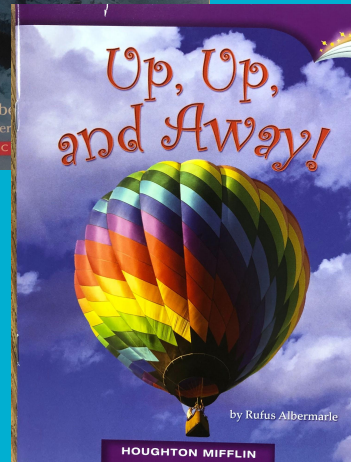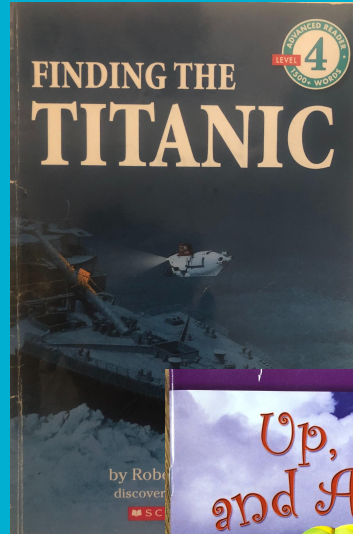
Victor's Reading Level Now: **M**
Up, Up and Away Level: **Q**

Comprehension Findings:
- Victor was only able to recall a few new things he learned and often reached for the text to try and jog his memory
- Victor often reread a passage instead of recalling a fact from memory
- He did remember that they called it the hydrogen balloon- possibly because I provided him with background on what hydrogen was when he struggled to decode it

Connection to Research

Knowledge of a content domain is a powerful determinant of the amount and quality of information recalled, powerful enough for poor readers to compensate for their generally low reading ability" (Recht, D, R. & Leslie, L., 1988, p. 19)

- Victor was able to compensate for the fact that the Titanic text was above his reading level due to his prior knowledge of the subject

It shows that the ability to comprehend a text is based on so much more than decoding because as Recht and Leslie discovered in their study, high level readers with low knowledge of the content area were **no more capable** of recall and summarization than students at a low reading level and low knowledge of the content (Recht, D, R. & Leslie, L., 1988, p. 19)

Greater knowledge of the content area (no matter the reading level) results in more recall, better recall of important ideas, and incorporation of those importanti ideas into summary

Why is any of this important?

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Implications

The results suggest that children should not be expected to comprehend material where the major concepts contained therein are unknown, even when the concepts are explicitly defined in the text. Results of this study also have some implications for use of informal reading inventories. Informal reading inventories are administered without attention to variables such as the child's interest in the material or level of prior knowledge of the topic. Since only one or two passages are read at each level, the instructional reading level could be over- or underestimated depending on the child's level of knowledge of the topics read. It would be interesting to determine the range of instructional levels obtainable when a child reads familiar versus unfamiliar material as estimated by free-association or prequestioning techniques. Future research should address this issue.

Text selection is so important in the result of a student's reading level. Essentially, Victor could be reading on two different levels according to two different types of texts.

(Taft and Leslie, 1985. P. 177)

Larger Classroom Implications

In the classroom, it is important that students read a variety of different texts, and are able to **choose** books to read that they are interested in. -Shanahan (2012)- Recommendation 5

When introducing books on unfamiliar topics in the classroom, help **activate students schema** and **prior knowledge** by providing them with context and relevant **vocabulary** before beginning to read in order to set up all students to success.   As Tompkins (2005) states, "when students are preparing to read a book on an unfamiliar topic, they need to build background knowledge" (p. 111)

When choosing class instructional texts, make **home-school connections**. As Moll et.al. (1992) states, "funds of knowledge can be used to help improve student academic development" (p. 137).

References

Beck, I. L., McKeown, M. G., & Kucan, L. (2002). Bringing words to life: Robust vocabulary instruction. New York: Guilford Press. [Chapter 2 &3, Choosing Words to Teach.15-46

Goodman, K. (1986). What's Whole in Whole Language. Portsmouth, NH: Heinemann Educational Books, Inc.

Graves, M. F., Baumann, J. F., Blachowicz, C. L. Z., Manyak, P., Bates, A., Cieply, C., Davis, J. R., & Von Gunten, H. (2014). Words, words everywhere, but which ones do we teach? The Reading Teacher, 67(5), 333–346. doi:10.1002/TRTR.1228

Moll, L. C., Amante, C., Neff, D. Gonzalez, N. (1992). Funds of Knowledge for Teaching Using a Qualitative Approach to Connect Homes and Classrooms. *Theory into Practice.* 31(2). 132-141.

Priebe, S. J., Keenan, J. M., & Miller, A. C. (2011). How Prior Knowledge Affects Word Identification and Comprehension. *Reading and writing, 7,* 581-586.

Recht, D, R. & Leslie, L. (1988). Effect of Prior Knowledge on Good and Poor Readers' Memory of Text. American Psychological Association, 80 (1), 16-20.

Shanahan, T., Callison, K., Carriere, C., Duke, N. K., Pearson, P. D., Schatschneider, C., & Torgesen, J. (2010). Improving reading comprehension in kindergarten through 3rd grade: A practice guide (NCEE 2010-4038). *Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. 5-38.*

Taft, M. L. & Leslie, L. (1985). The Effects of Prior Knowledge and Oral Reading Accuracy on Miscues and Comprehension. Journal of Reading Behavior, 17 (2), 163-179.

Tompkins, G. E. (2005). Chapter 3: The reading and writing processes. *In Language Arts: Patterns and Practices. 102-131.*