

# Volume and Becoming a Virtuoso Reader

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Broadly speaking, I would say that there are two stages that children go through in learning to read. The first stage is the "learning to walk" stage: a child develops a speaking vocabulary, learns a few facts about the world she lives in, begins scribbling and developing some concepts about print mechanics, puts phoneme awareness together with the alphabetic principle, and learns to clumsily decode and write words.

The second stage is the "learning to run" stage: a child develops motivation and appreciation for literature, and spends a lot of time reading interesting, engaging text. Through practice, and perhaps with a little guidance and instruction from people more experienced than her, she learns sophisticated reading comprehension and writing composition strategies. She learns a lot more about the world, and she uses that knowledge to draw inferences and make insightful leaps. She really loves reading, and thus reads some more. She develops a real appreciation for different genre of text, she enhances her vocabulary constantly, and she polishes her decoding skills until they shine. And still she reads some more. She reads and reads and reads, and in so doing, she becomes a "virtuoso" reader. She knows all kinds of cool things about the world, and she knows how to learn more. She has a huge vocabulary, and the more words she knows, the easier it is for her to learn new ones. She writes without thinking about it; she reads without any effort what-so-ever, and she constantly gets better and better.

Personally, I'm still in that "learning to run" stage. So are you. We will be for

the rest of our lives. We have the "basic skills" we need, and we spend time practicing. You and I make a habit of reading; we enjoy it, and we spend easily an hour or two every day reading. All because we learned to walk, and then we learned to run. I would wish that for every child in the world.

Now, before you write me angry letters, I know full well that this is an oversimplification, and that learning to read is not as simple as learning skills and then applying them, but the analogy serves a useful purpose for the story I want to tell, so bear with me.

There are some children who have never really gotten a handle on "walking," but we're asking them to run. That's bad. But there are also children -- many, many children -- who have only learned to walk, and we've never really challenged them to run. That's just as bad.

As I have worked with teachers of older children -- grades 3 and up -- I've found that they largely have students that fit into one of these two categories. Either



the child is still needing some instruction in how to "walk," or the child is really needing instruction in how to "run."

Most of what I have written to date in my professional career has focused on teaching children to "walk." I worry at night about NAEP scores that show that nearly 40% of our young children lack basic reading skills. I should probably also worry about the fact that less than 10% of our children are considered to be "advanced" readers, but I just don't have time. The night is only so long, and I have enough to worry about.

For a moment, however, I would like to turn my attention to the kids who can walk, but can't run. They have the basic skills, but they don't read well. The stereotype is the child who reads slowly and reads at a level that is several years behind her peers. This child passes those basic skills and competencies tests, but the teacher is still concerned that this child struggles when reading age-appropriate text.

It is always important to encourage children to take the time to practice reading, but for this child -- the child who is walking but not running -- it is especially important. Learning to read is like learning to play a musical instrument. It is important that you learn the basics, and that you learn

something about music theory, and that you practice simple skills. But if you do not spend real time playing that instrument in a meaningful way, you will never really be adept with that instrument -- you will never be a "musician."

The child who can sound-out words, but who does not sound-out words with ease, needs to spend some serious time practicing with real, connected text. This child does not need much instruction with basic reading skills; this child needs to practice, practice, practice.

I simply cannot overstate the importance of giving all children significant chunks of time during the day to practice reading connected text. Ten minutes is not

enough. You and I are "virtuoso" readers because we spend a lot more than ten minutes a day reading. We easily spend, on average, an hour, maybe two hours a day reading. And when we were learning to read, we might have spent considerably more time than that. I don't know you at

all; chances are I've never met you, but I can tell you with complete confidence that you became a skilled reader because you read voluminously.

I also cannot overstate the importance of giving children time to write. Reading



and writing go together hand in glove. Reading and writing are just two directions on the same highway. Children who are having difficulty with reading often work through their difficulties by practicing writing (and vice versa).

And for both reading and writing, I cannot overstate the importance of encouraging children to spend time with text that is easy and comfortable.

As teachers, it is important that we help children to scaffold their skills, and that we constantly endeavor to enhance their learning and skill development.

There is a time for that, and we should not neglect the need to broaden horizons. However, there is also a time for refining and polishing the knowledge and skill that we already have, and when I talk about reading and writing voluminously, I'm mostly talking about working well within our comfort level.

The child who is "walking" but not "running" probably does not spend more than a few minutes a day actually reading. When that child does read, it is usually academic and required reading. And the child does not write unless forced to (and usually that child wants to know "how long" their writing assignment must be). That child's habits can be drawn in direct contrast with the

habits that you and I developed early and continue to maintain. We read frequently, we read for pleasure, and we read and write voluminously (again, typically informally and for pleasure).

How do these different habits affect us? Well, first of all, most of the words you know, you learned from reading. It is estimated that people who read voluminously are familiar with three to

*most of the words you know, you learned from reading. It is estimated that people who read voluminously are familiar with three to four times as many words as people who do not make a habit of reading.*

four times as many words as people who do not make a habit of reading. Imagine what an advantage is afforded to a child who has three to four times the vocabulary of her peers. Imagine how easy it is for that child to read a passage of text

at her grade level, and imagine how hard it is for her peers who do not have the same substantial vocabulary to read the same passage of text.

Acquiring new vocabulary through reading does not come easily, either. When you read a book, most of the words in that book only appear one time. That is to say, a few of the words appear over and over again, but most of the words only appear one time in the whole book.

In fact, most words you encounter, you encounter very rarely. There are thousands and thousands of words in the English language. Some of them,



like the words "the," "of," "and" and "to" occur over and over in text. In fact, if you counted how often the word "the" appears in this text, you'd find that about every 14th word is the word "the." The word "the" is the most frequently used word in the English language. Next is the word "of" followed by the word "and." These words appear in text over and over again, so when you read a passage of text, you encounter them constantly.

These are called "high-frequency" words (and some people call them "sight words"). If I eliminated the 12 most frequently occurring words from this passage of text, I would be eliminating 25% of the text. There are 125 words in English that make up half of the words we use -- every other word we write or read is one of those 125 words.

The 125 most common words in the English language. These words make up half of the words in text.

THE	FROM	OUT	NOW	BECAUSE
OF	OR	SO	SUCH	EACH
AND	HAVE	SAID	LIKE	JUST
TO	AN	WHAT	OUR	THOSE
A	THEY	UP	OVER	PEOPLE
IN	WHICH	ITS	MAN	MR
THAT	ONE	ABOUT	ME	HOW
IS	YOU	INTO	EVEN	TOO
WAS	WERE	THEM	MOST	LITTLE
HE	HER	THAN	MADE	STATE
FOR	ALL	CAN	AFTER	GOOD
IT	SHE	ONLY	ALSO	VERY
WITH	THERE	OTHER	DID	MAKE
AS	WOULD	NEW	MANY	WORLD
HIS	THEIR	SOME	BEFORE	STILL
ON	WE	TIME	MUST	SEE
BE	HIM	COULD	THROUGH	OWN
AT	BEEN	THESE	BACK	MEN
BY	HAS	TWO	WHERE	WORK
I	WHEN	MAY	MUCH	LONG
THIS	WHO	THEN	YOUR	HERE
HAD	WILL	DO	WAY	GET
NOT	MORE	FIRST	WELL	BOTH
ARE	NO	ANY	DOWN	BETWEEN
BUT	IF	MY	SHOULD	LIFE



But what about the other half? While there are very few words that occur very, very frequently, there are very, very many words that occur very rarely. While 125 words make up half of this passage of text you are reading, there are thousands of other words that make up the other half. And there are many, many thousands of words that you only encounter once in a blue moon.

These are called "low-frequency" words, and they are the most important words in our language. The high-frequency words usually don't carry much meaning -- most of them are called "function words" because they serve a function in text, but they don't have much meaning. They are words like "the," "of," "and" and "to" (See table). In contrast, most of the interesting words in our language are words like "horse" and "window" and "booger" -- these are called "content words," and without them, our language would be meaningless. Without the function words, our language is still fairly meaningful, but the content words are essential. Unfortunately, the content words are the words that only occur once in a blue moon. This text that you are reading is comprised of a lot of words that you will read over and over again, and a lot of words that you will only read once or twice. Every passage of text is like that. And this creates a problem for most readers; most of the words that you know, you encounter rarely. Words like "credenza" and "alimony" just don't come up much. So how do you know them?

Well, there are two important ways. First, if you read voluminously, you do encounter low-frequency words more often. I can illustrate this with some simple math. Take a look at the following table.

Minutes Per Day	Words Read Per Year	Words Read Per Second
65	4,358,000	3.06
21.1	1,823,000	3.95
14.2	1,146,000	3.69
9.6	622,000	2.96
6.5	432,000	3.03
4.6	282,000	2.8
3.2	200,000	2.85
1.3	106,000	3.72
0.7	21,000	1.37
0.1	8,000	3.65
0	0	0

This data in the left two columns was first published by Anderson, Wilson, and Fielding (1988). While this is authentic data, I find it somewhat suspect because of the column on the right (which I added by doing some simple math). Still, the data is about what I would expect it to be, and it is useful for illustrating my point. If you read approximately 15





minutes per day, you read approximately 1 million words per year. On the other hand, if you read just over one minute per day, then you only read about 100 thousand words per year.

Now consider a word like "credenza," which normally occurs one time in a million words of normal text. If you make a habit of reading just over a minute per day, chances are, you'll only encounter the word "credenza" one time in ten years. On the other hand, if you read 15 minutes per day, then you will likely read the word "credenza" sometime this year. Taking things further, if you, like most skilled readers, spend an average of two hours per day reading, then you will encounter low-frequency words like "credenza" once every six weeks or so.

The simple fact that people who read a lot encounter the word "credenza" more often dramatically increases the chances that they will learn the word "credenza" and make it part of their vocabulary. Saragi, Nation, and Meister (1978) illustrated this point marvelously. They had a group of adults read the book "A Clockwork Orange" which contains a lot of "pseudowords" (words that look real, but which the author made up). After

reading the book, the readers were given a pop-quiz on their familiarity of the pseudowords used in the book (only pseudowords that were used 15 times or more in the book were used in this

study). They showed that, even without knowing they were supposed to be learning these non-sense pseudowords (they had no idea there was going to be a pop-quiz), the adult readers did learn more than half of the pseudowords.

This is a round-about approach for getting to the point I want to make. If a child does not make a habit of reading for significant periods of time every day, that child will

not encounter low-frequency words repeatedly, and if the child does not encounter them repeatedly, the child is very unlikely to learn them.

Now, remember I said that reading voluminously is one way that you become familiar with low-frequency words; another way involves a mechanism that your brain has evolved that helps you to process, retain and remember "word-like" words over time. Your brain is an excellent "pattern detector." Your brain, and your whole perceptual system, is tuned to finding patterns in the environment, and that



excellent ability to detect patterns definitely helps you to read text and learn new words.

We have 26 letters in our alphabet, but the letters are not sequenced in words in any random order. In English, there are letter sequences that are legal and ones which are not legal. Take "SQT" for example -- there is no word in the English language that contains those three letters in that order. Similarly "NZX" is not a possible letter sequence. It can not be pronounced in English.

But what about "FUA?" That can be pronounced, but I can't think of a single English word that contains that particular sequence of letters. I had my computer do a search, and all that it came up with is the word FUAGE, and I don't even know what that means. Similarly, "UID" is not common, although in this case, my computer did generate a few words that contain those three letters in that order -- FLUID, DRUID, GUIDE, LIQUID and EQUIDISTANT.

Now what about "ING?" I can think of quite a few words that contain these three letters in that order. Same with "ENT," "EAT," "ION," and "STR." These are very common

letter sequences in English -- they are used in high-frequency words, and they are used in a wide variety of different words, so you come across them very often when you read.

How often? Well, this is why I love technology so much. I had my computer calculate approximately how often you would come across the letters ING in that order if you were to read one-million words of text. The computer estimates (and this is just an estimate, mind you) that you would encounter those three letters in that order 17,466 times in one-million words of standard English text. What about ENT? My computer estimates that you would encounter the letters ENT in that order 13,205 times in one-million words of standard English text.

In each alphabetic language, there are rules for how letters can be sequenced. Your brain is tuned into the common letter patterns for English (and for whatever other languages you read fluently). Your brain recognizes these

common patterns and "chunks" them together so they require less attention (Stanovich & West, 1989; LaBerge & Samuels, 1974; Samuels, Scherner & Reinking, 1992). The more you read English text, the



more familiar your brain becomes with all of the letter patterns that frequently occur in English text.

This is one reason why learning a foreign language is so difficult -- the letter patterns and letter sequences used in other languages are quite different from the English patterns you are familiar with. Not only do you have to learn a whole new vocabulary, but you must learn new conventions of spelling as well.

Take a look at this list of words.

tucqui  
taudua  
duavata  
heledag  
buiten  
prachtig  
moeder  
schaufel  
niemals  
gesucht  
gefunden  
umgekehrt

On my shelf here, I have a variety of children's books written in various different languages. The words in this list were taken from those books (so these are not difficult words; they are words that young children are familiar with). There are a few different languages represented there, but that all the more illustrates my point. The way letters are sequenced in other languages is very

different from the way they are sequenced in English, and you can almost identify which language each word came from by the sequences of the letters ("tucqui" doesn't look very German, but "gesucht" sure does).

Now take a look at these two lists of words:

tucqui	pillay
taudua	fornate
duavata	sheeding
heledag	zendic
buiten	sprise
prachtig	debrite
moeder	terpice
schaufel	brudition
niemals	rebert
gesucht	stalonic
gefunden	treachent
umgekehrt	lappage

If you had to learn some new vocabulary, which vocabulary list would you rather have to learn? On the left are real foreign words. On the right are pseudowords that are similar to real English words. That is, at least from the English speaker's perspective, they are "word-like" pseudowords.

I've conducted studies on the "learnability" of words, and I've found a few remarkable things. First, I found that when college students encounter a pseudoword they have never seen before, they process that pseudoword fairly slowly. However, when they





encounter that same pseudoword a second time, they process the word significantly faster. Their brain "remembers" the pattern of letters that make up the pseudoword, and is therefore faster at processing them.

This in itself is interesting, but what is really interesting is that this facilitation lasts for weeks. I asked a group of college students to read a bunch of pseudowords out loud. Then a few weeks later, I asked those same students to come back and read pseudowords out loud a second time (and I had the computer time how quickly they read the pseudowords). In the second set of pseudowords were some they had seen weeks before, and others they had never seen before. The students did not consciously remember the "familiar" pseudowords from the previous session, but they still named them faster, even though they had only seen them once before in their entire lives, and even though the last time they

had seen them was weeks previously.

I found this fascinating... The brains of these college-age readers are geared to recognize patterns of letters weeks after seeing them for the first time. When you put this fact together with the fact that low-frequency words are only encountered once in a while, you start to see how we are able to learn new words and enhance our vocabulary even though we rarely encounter most of the words we know.

One thing that I noticed about that study, however, was that all of the pseudowords that I used were very "word like," meaning that they all resembled common English words, and that they were all made up of common English letter sequences (e.g. "graim" and "thore"). It would be interesting to conduct a new study wherein some of the pseudowords are very "word-like" and others are not very "word-like" at all (e.g. "kuneci"). I haven't done the study yet, but I'd bet that people would not be as adept at processing the non-word-like pseudowords as they are the word-like pseudowords.

So basically, children who read a lot encounter more words, they encounter them more regularly, and it seems that their brains develop specialized mechanisms that help them to learn new words more easily. Children who do not read a lot are at a severe disadvantage for a variety of reasons, and the reasons





I've mentioned are primarily related to vocabulary development. There are many OTHER reasons that I really have not addressed that children who do not make a habit of reading are at a severe disadvantage.

Researchers have shown that when children are given a substantial amount of time every day to read silently for enjoyment, they develop significantly better attitudes about reading (Arthur, 1995), they perform better on tests of reading comprehension, vocabulary and spelling (Weller and Weller, 1999; Saragi, Nation, and Meister, 1978; Krashen, 1993), and their reading speed is improved (Dwyer and West, 1994). Similarly, background knowledge is enhanced by reading (Kintsch & Keenan, 1973).

Knowing all of this, we should return to the issue of children who can "walk" but can not yet "run." Children who do not make a habit of reading, even though they have "basic reading skills," frequently find themselves getting left behind by their peers. These children likely would benefit from instruction that motivates them to spend time, both in the class and at home, reading for pleasure. Not all of the text they read needs to be "challenging," although some of it should be. What is most important for these students is that they practice the art of reading so they move from the laborious, attention-demanding "basic-skills" stage into the effortless, fluid, connected-reading stage.

