How to promote orthographic mapping - with Michelle Sullivan

Triple R Teaching Podcast #224

Hello, this is Anna Geiger from Reach All Readers. Today I'm welcoming Michelle Sullivan of The Colorful Classroom. She is a wonderful resource for all things phonics, morphology, etymology, and vocabulary. Today she's going to talk with us about how to promote orthographic mapping.

As you might recall, orthographic mapping is a mental process, so it's not something we can *do*, but it is something we can promote. She's going to share three ways that we can do that. Here we go!

Anna Geiger:

Welcome, Michelle!

Michelle Sullivan:

Hi, Anna!

Anna Geiger:

It's so good to have you back. Can you reintroduce us to yourself real quick before we get into our topic today?

Michelle Sullivan:

Of course. It's so good to be back. Thank you for having me!

My name is Michelle Sullivan and I am the face behind The Colorful Classroom. I have over a decade of experience in literacy-centered roles from being a reading interventionist to a literacy coach. Right now I'm currently focused on supporting teachers through my online platforms and my podcast, Literacy in Color. My whole mission is just to help bring that science into action and make things really accessible for teachers.

Anna Geiger:

We're going to talk today about orthographic mapping, which when I first learned about the science of reading, that was a hard one for me. Now I think it's very simple and easy to understand, but it wasn't like that at first. Can you walk us through what orthographic mapping is?

Michelle Sullivan:

Yeah, absolutely. It's a big scary word, right? But I think it's an important one to clarify.

You know I'm a big fan of morphology and etymology, so I always like to look into the meaningful parts of these big scary words for a deeper understanding.

That first part, O-R-T-H is rooted in Greek and it means correct, proper, or straight. We think of a word like orthodontist. It's a dentist who makes your teeth straight.

Then we have that next part, G-R-A-P-H, which many of you are probably familiar with having to do with writing.

So our orthography would be the correct or proper spellings in our writing system.

Then when we think of this bigger term, orthographic mapping, it's a mental process. It's a cognitive process that we're using to store words into long-term memory for that instant automatic retrieval. We're essentially imprinting or mapping these correct spellings into our brain so that words no longer have to be sounded out. We can just read them with automaticity in a split second within seeing it.

The fascinating part about orthographic mapping, what I think is really cool, is that once a word is mapped, we can't forget it.

I think back to doing high frequency word assessments with children, and it's like, “Oh, they forgot these words!” Or “They scored this many words in September, and it went down in the winter.” Well, those words weren't mapped. We also didn't happen to map these words because we learned them by sight, but we recognized them by sight.

We've mapped the words thanks to the effortful decoding that we've put into our work in trying to recognize letters-sound correspondences and those kinds of things, and internalizing the internal structure of a word along with its meaning or its function.

Essentially we're connecting the sounds in a word to their spelling patterns and also understanding what these words mean and how they function.

This process requires really strong phonemic awareness, especially the ability to segment and blend phonemes, as well as a really growing understanding of letter-sound correspondences. Often we call this the alphabetic principle. When students map a word, they're anchoring it in memory by linking the sounds to the symbols and the symbols to the sounds while often activating that meaning processor in the brain.

Anna Geiger:

So what's happening in a classroom where kids seem to know the words, but then a few months later, like you said, the number they know is less or the words that they got correct before they don't get correct? What is happening when they “knew” them at first, but now they don't.

Michelle Sullivan:

Yeah, so perhaps they recognized a word visually at one point, and then their brain is not holding that word in their long-term memory as a whole unit, and they happen to forget it. It wasn't necessarily mapped as a word for instant retrieval. It didn't become a sight word for them. That would be my best guess as to what happened. We drilled it for a week and we got it for the test, but then we forgot it by Monday.

I think that seems to be the case in a lot of schools or systems that push for memorization rather than the decoding work that goes into actually internalizing the structure of words.

Anna Geiger:

Yeah, I've noticed some people when they talk about orthographic mapping, they talk about it as memorization. Would you ever use those words together?

Michelle Sullivan:

I mean, there is a component that we're remembering, but it's not that we're learning by memorization. I think there's a little nuance in that.

To an extent, we have memorized these words, but I don't like to use the word memorization because I think it gives a different connotation.

Anna Geiger:

Yeah, I try to avoid that too because to me it sounds like we're teaching them to memorize the shape of the word, which is what many of us used to do with the high frequency words, and what many teachers are still doing because of expectations they might have. Then they might be told your kids have to learn this many words by the end of the year, and they don't see any other way than having them memorize them.

But then often, the kids hit a wall at a certain point in the middle of the year and start dropping off the words that they thought they had learned previously. That's why this idea of orthographic mapping is so important.

But there is some confusion about what orthographic mapping is and what it isn't. Can you explain what it is not, besides memorization?

Michelle Sullivan:

Orthographic mapping is not a teaching method.

I often see this where a lot of teachers are excited to be learning this new vocabulary along with the science of reading research, and they're saying to their students, "We're orthographically mapping these words today! Get ready to do some orthographic mapping!"

But orthographic mapping is a mental process that's happening in the brain.

I often see people confusing the terms "orthographic mapping" with perhaps "phoneme to grapheme mapping" or "word mapping."

Anna Geiger:

Or "sound mapping."

Michelle Sullivan:

Yeah, word mapping is an activity, while orthographic mapping is the actual cognitive process. They're not interchangeable terms. One is something that you can do with students and the other is something that's happening in the brain.

Another misconception is that we, as teachers, can do the orthographic mapping for our students. We can't expect to just give one to four exposures (we see these numbers often), and expect that students will have those words down pat.

What we can do is we can make the conditions right. We can utilize activities that perhaps promote the mapping process where we're activating all those different parts, your letter box in the back of your brain, your phonological linking the sounds, and then that meaning processor. When we're linking all three of those parts, that's what's really making words stick.

Anna Geiger:

Yeah, and like you said, we can't necessarily dictate the speed that this is going to happen. You may be reading decodable text with your kindergartners and one child reads the word “fish” on one page and two pages later they're still sounding it out. Whereas somebody else might read it once and they remember it now. They've mapped it very quickly. You can see that in real time, how some kids map quickly and others don't.

I have heard recently, and I have not looked into it myself, but I know very recently Linnea Ehri, who is the founder of the theory of orthographic mapping, put out a statement about orthographic mapping and its relationship to morphology, which was the topic of our last conversation between you and me. Can you tell me more about that?

Michelle Sullivan:

I think this is really exciting news, and I think it's a big shift in how we're going to be understanding the role of morphemic units in the whole orthographic mapping process.

Dr. Linnea Ehri, like you said, is the one who came up with the term orthographic mapping many moons ago. She said after considering the work of Pete Bowers and Sue Hegland… She recently shared a quote that she's conceptualizing this process as not only mapping phonemes to graphemes, but also mapping morphemes.

I have a quote from her, and I'll read it verbatim. She says, “Orthographic mapping can be conceptualized as recruiting units of the morphographic system to connect morphemic units in spelling of words to their meaning and syntactic functions. This bonding is equally important.”

She also said that morphographic spelling system qualifies for orthographic mapping.

I often say that a morpheme doesn't have a set pronunciation until it's fixed to a word. Typically when we think orthographic mapping, we're bonding the letters to the sounds, the sounds to the symbols, and yet our brain is also storing these morpheme units.

I think ED is the perfect example, suffix ED, because it can sound like /t/ or /d/ or /ĭd/ depending on the base that it's affixed to. But our brain can still efficiently store and retrieve that morphemic unit as a meaningful chunk because it has a consistent spelling and meaning connection.

I think mapping at the morpheme level might have a little bit more flexibility when it comes to attaching it to those pronunciations, but I think it also explains how we can read and spell morphologically complex words with automaticity as well.

If you think about those big multi-morphemic, multisyllabic words, then yes, our eyes are still looking at every single letter string and, in milliseconds, our eyes are paying attention to the graphemes, but we're also recognizing those morphemic units and their meanings.

I think it's just a cool thing to think about that Linnea Ehri is acknowledging that morphology holds a place in the mapping process as well.

Anna Geiger:

It's so interesting. I'll be really interested to follow that and see what's next.

Can you share with us three activities that promote orthographic mapping?

Michelle Sullivan:

Yeah, so I have three activities, and some of these might be familiar to a lot of your listeners.

The first I already mentioned, but we can walk through the actual routine and what it would look like in a classroom. The first is just good, old, tried and true, word mapping. Some people like to even give it a fun little name, like Say It, Tap It, Map It, Write It. Others will even include another adage, like Zap It, if they're using those magnetic wands to scoop up their bingo chips and such.

Essentially how it works is that you would say a word aloud and use it in context. The students would repeat that word aloud. They need to be saying the word aloud because that's activating that phonological processor. It's tapping into the oral language; we're pulling into the word in their vocabulary.

Then here's where phonemic awareness comes in. We're going to segment the sounds, or we're going to tap or count those phonemes. You can use your fingers or you can use counters.

For example if the word is "play," I might say the word, "play," and I might use it in the sentence, "Olivia likes to play at the park." The students would repeat the word, "play," and then segment it into /p/-/l/-/ā/, three sounds.

The next thing we're going to do is we are going to map those sounds to the graphemes. I like to do this in boxes, like sound boxes, a lot of us are familiar with Elkonin boxes. We're going to add those letter strings into spelling boxes now.

Afterwards, I like to have students spell out the word conventionally as one whole unit without the spaces and spell it aloud, both with sounds and with letter names. They might look over that word and spell out /p/-/l/-/ā/ while tracing over it, or they might spell out P-L-AY.

I like to guide students also into a little word study work. "What was the first sound in play? /p/. How do we spell that sound? P. What was the last sound? /ā/. How do we spell that sound? AY. Why didn't we spell that with AI?"

Depending on what they've learned, they might say something like, "We know that English words don't end in I," or "We know that AY is used at the end of a syllable or a word."

Maybe we're even going to tap into that meaning processor again like, "What do you like to play?"

Students might say, "I like to play with Legos. I like to play with dolls."

Maybe you're going to bring in a different meaning. "Have you ever watched a play? That's a performance on stage, and it's spelled exactly the same way."

We're trying to build out that semantic network to strengthen the orthographic representation of that word.

Anna Geiger:

Thank you. That was very clear and concise in terms of all that you can do with just that one simple activity. Thank you very much.

What else do you want to share about orthographic mapping?

Michelle Sullivan:

Another activity, a really high utility, high impact routine is word chaining. It can promote the orthographic mapping process because we're manipulating one phoneme at a time and really looking at how one sound can change the whole word, not even just how it's spelled, but now what it means. Students have to be really attuned to the inner parts of words.

How do we know the difference between “red” and “bed,” right? Or “bid” and “bed?” Or maybe even, “bid” and “bad?” They just are different by one phoneme. Sometimes we call these minimal pairs. Sometimes when we see these side by side, people will often even call these lookalike words.

But when we're working through a word chain, we're paying really close attention to the individual letter strings and the sounds that they represent.

There are a few different ways to chain words. I might start out with the word “cat” and students would repeat the word “cat,” and my prompt might be, “Now change ‘cat’ to ‘cut.’” They would write that down. They would change the A to a U. Then I might say to change “cut” to “cup,” and now they have to change the T to a P.

I can also alternate my prompt and say, “Cup. Now we're going to change the /k/ to /p/. What's the new word? Pup.” They have to pay attention to where was that phoneme? How was it functioning? What position is it in?

“Now, if we have the word pup, change /ŭ/ to /ŏ/, what's the new word? Pop.”

There's even a third way that we can word chain where we're tapping into meaning. We can say “Pop. Now turn it into something that you cook soup in on top of the stove top.” Now it became pot, right? “Change it to what's found inside of a peach.” Now it's a pit.

Students are building their flexibility with graphemes to see how each sound affects the whole word and its meaning.

Of course, even if we're not doing that meaning-type word chain that I mentioned at the end, we can also bring the meaning component in by giving some contextual sentences or engaging quick little asides. These don't have to be lengthy, but they could be really helpful for those multiple meaning words.

When we did the word “pop,” we might say, “I pop the balloon, or my pop naps on the couch.” Again, we're just paying homage to building comprehension about what these squiggly lines on the paper actually mean. Because at the end of the day, we can't map a word if we don't know the meaning of it.

Anna Geiger:

Okay. And what's your last activity?

Michelle Sullivan:

I'm going to pay homage to morphology now. The third activity I'd like to share with your listeners is just utilizing word sums or even a set of morphologically-related words for some of our tricky high frequency words.

I think word sums are great for all types of words, but they're especially powerful when we're considering some of those words that don't seem to follow the rules. We often label these words as irregular, and many of them perhaps are tricky when it comes to phonology, but they can be explainable when we take a look at the structure of words and when we have a morphological lens.

A word sum essentially is when we break a word down into its morphemic units and we separate those morphemes by an addition sign. Then we use a rewrite arrow and reconstruct it as a whole word.

Take the word “does,” for example. It's often taught as an exception. A lot of people will call this a heart word. If we were to use word mapping, which would not be my first line of defense for this particular word, OE is doing something really funky, and we'd have to memorize that unit, right?

The thing is, though, OE is not the grapheme that's representing the vowel sound in this word. It's actually DO, the base word DO, plus suffix ES, and it's rewritten as DOES.

I think that's why Linnea Ehri’s recent sentiment about morphology is really important.

In my interpretation, we're not trying to bond that OE spelling to the pronunciation of /ŭ/. That's actually not worth our brain space because it's not functioning that way in other words.

Anna Geiger:

Yes.

Michelle Sullivan:

We see that internal structure, DO plus ES, and the /oo/ is shifting to an /ŭ/. There's a pronunciation shift where the base DO took on a slightly different vowel sound.

And guess what? That O grapheme does represent an /ŭ/ sound in other words, even in the morphologically related word, “done,” right? Or in other words like “shove” or “mother.” There are so many words where O represents /ŭ/.

When we utilize word sums, we're giving students a different tool for making sense of that spelling, not just by memorizing the tricky parts.

Anna Geiger:

I appreciate you talking about how there are different ways you can look at these “irregular” words. You don't just have to map them. If that doesn't work easily, you could do something else like look at the morphology piece.

That word “does” did trip me up for a long time. I used to say that OE was spelling /ŭ/, and what really helped me to understand that was that, first of all, I learned the DO plus the ES, but then that graphemes cannot cross morphemic boundaries. That was a huge thing for me.

In a longer word, like in the word “traction,” for example, TI is not spelling /sh/ because the T and the I are in two different morphemes. We have the TRACT and the ION, and this is just an illustration of that, but that's super helpful.

I love how you brought morphology into your examples for promoting orthographic mapping. I know that you have a course now about morphology with Sarah Paul. Do you want to talk a little bit about some things that you share with teachers, including that?

Michelle Sullivan:

Yeah, so Sarah Paul and I joined forces to create Logos Literacy Academy. Our mission is to create science of reading aligned courses that support teachers and their work in understanding a lot of this deep knowledge, but also implementing.

Our first course of action is we created a morphology course called Mastering Morphology. It's the first in a three-part series all about morphology, and we go knee-deep into what morphology is and why these tricky words are the way they are.

A lot of teachers don't have access to this type of information, and so many times we call English crazy and irregular. There are words that just don't follow the rules, but there is a rhyme and a reason to a lot of this work.

We help teachers break that information down so that they build a really strong foundational knowledge and that they can feel more equipped to help their students when it comes to accessing these types of words.

Anna Geiger:

Thank you. Then you also have your podcast and your website. Do you want to talk about those real quick?

Michelle Sullivan:

Yeah, sure. I started the Literacy in Color podcast last October, and it's been my favorite part of my days. It's been a really wonderful outlet to share science of reading aligned tips, tools, and strategies with educators all over in an accessible way.

A lot of times teachers don't have access to attend all the conferences or the funds to go to some of these bigger name outlets to listen to the researchers. It's been nice. I've had a combination of solo episodes, some of the researchers out there, and then some teachers just bringing the science of reading to life in an accessible way.

Anna Geiger:

Thank you so much, Michelle. It's been wonderful to talk to you again. I'll link to all those things in the show notes. Thanks again!

Michelle Sullivan:

Thank you so much for having me!

Anna Geiger:

Thank you so much for listening. You can find the show notes for today's episode at reachallreaders.com/episode224. Talk to you next time!

Closing:

That's all for this episode of Triple R Teaching. For more educational resources, visit Anna at her home base, reachallreaders.com, and join our teaching community. We look forward to helping you reflect, refine, and recharge on the next episode of Triple R Teaching.