

The Brain & Literacy



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The Brain and Literacy

Our brains are designed to learn. In fact, we are born with so many brain cells that it's said we'll never get around to using all of them. As we learn things, our brain cells 'wire together'. It's this wiring that helps the brain cells work together so we can learn.

But while we do have an in-built ability to speak, we don't have an in-built ability to read and write. So, to learn reading and writing, we have to use parts of the brain designed for something else. The trouble is that some methods of teaching reading teach us to use the wrong parts of the brain, and doing that can help us progress faster when we are first learning to read, but it causes lots of problems later on.

On the other hand, when we're taught to read using a properly designed literacy course, our brains learn to use the parts of the brain that deal with **speech**.

That makes sense early in the learning to read process, and later on, because writing is really just speech transposed into a visible form.

In English literacy, it's essential to be able to **hear** the individual speech sounds in words, because that's the way English was designed to be written and read.

About 20% of school aged children have problems hearing the individual sounds in words and/or have trouble linking a sound to its relevant letter.

Most of these students just need some patient teaching and a bit of extra practice in order to re-learn these skills. If students can speak reasonably well, we know they had these skills earlier in their lives, because they used them to learn to speak. The trouble is that this skill has gone a bit rusty from lack of use, so we need to “refresh” that skill before begin teaching letters.

About 5% of students have problems

It's said that about 5% of children have a lot of trouble learning to hear these individual sounds. Some have great trouble linking the sounds to the letters, and some have a lot of difficulty hearing the sounds AND linking sounds to letters.

It's thought that this 5% of children have profound dyslexia, which really just means the student is having trouble with words. It's currently thought that these problems are caused by weak brain wiring in the parts of the brain used for these skills.

NOTE: A letter between slash marks is referring to a sound. For example, /m/ means the first sound in the word *mountains*.

Most of the difficulties with hearing the sounds arise because we say the individual sounds very rapidly. Many of these sounds cannot be spoken slowly! (Try saying sound /k/ slowly! You might manage to do this, but only if you say the inaccurately, e.g. as:/kuh/. Sound /k/ can't be 'stretched out' in the same way that sound /m/ can be - e.g. in mmmmmmm.)

For almost everyone, isolating the individual sounds is a learnable skill, but some students do need specialised help. If you have a student with a major problem in this area, search online for *Fast Forward*, or *Audiblox*.

Brains need repetition

Sometimes, if the student is having trouble learning to read, the problem is just that the student hasn't had enough practice to be able to really learn something properly - e.g. the student isn't **TOTALLY** clear about which letter represents which sound, and just needs practice to be able to say the right sound automatically.

If you decide to teach your student yourself, remember to only teach one thing at a time, until the student really knows that information well. Teaching several things at once often leads to confusion.

Brains like repetition. Drill helps brains learn something well. Drill can be tedious for the people involved, but if you want a brain to learn something well, you have to help it out by giving it enough practice.

The reason practice helps brains learn is because when we first learn a new fact or action, new wiring is formed to “wire the information in”. Then additional wiring needs to be formed to connect the speech and visual parts of the brain that will work together. At this stage, both types of wiring are very fragile.

But, each time we practice that information, the wiring is reinforced. This is the same as when we do a physical action repeatedly – the muscles get stronger. It’s the same with our “brain muscles”.

Permanent brain wiring takes practice

This brain wiring only becomes permanent if it's practiced often enough **WITH FULL ATTENTION**. Practicing without full attention doesn't result in the strengthening of the wiring.

This means that to learn something, you have to pay **FULL ATTENTION** as you do it, and you must practice regularly. **BUT** in order for it to be possible for that full attention to be sustained, it's important to repeat the action only a very few times in one sitting.

For example, if you're working your way through a set of flashcards - only work through the pile once or twice a day - not more often, because too many repetitions will cause students' attention to wander. And if they're not paying full attention, their brains can't reinforce the wiring!

Brains need time

Brains need time, as well as needing repetition. It's important to keep in mind that a new fact or skill has to be revised over a period of time - repeating a fact 50 times is a waste of time and energy, because after about 3 repeats, the brain can't pay attention.

Repeating the new fact about 3 times when learning it, then another 3 times at the end of the lesson, and then another 3 times in one go each day until it's "wired in", will develop the brain wiring into a super highway in no time.

This way of doing revision takes only a few seconds, so no-one (brain owner or brain) has to be bored witless!

Teach in a Brain-friendly way

It's also important to teach in a brain-friendly way. That means to teach new information in bite-sized pieces, and to revise that information in exactly the same way each time. This causes the brain to use the same piece of wiring, so its wiring get stronger more rapidly.

If, for some reason, you want to train a brain to recall the same information in an alternative way, you need to teach that information again, in that different way, and then revise it that different way (as well as revising that information in the original way).

As brain wiring gets stronger, the information travels down the wire faster and faster. It's like comparing how you travel down a dirt road and how you travel down a highway. You travel a lot faster down the stronger, straighter, better paved highway; it's the same with a brain super highway.

Brains need things to make sense

Brains also have a problem if the material they're trying to learn doesn't make sense, because when they're taught stuff that doesn't “compute”, brains often just switch off.

But remember, the brain is like a toddler. It doesn't have a mature perspective on reality. To help toddlers stay alive, we explain things in a way they can understand.

For example, we tell toddlers they mustn't touch electric plugs because those plugs bite!

We know that's not exactly true - but toddlers don't understand electricity, so we have to work within their limits of understanding. They usually do understand, from bitter experience, about things that bite! So we work with that.

In the same way, brains have trouble understanding new ideas, and they often just shut down at the very thought of having to learn something new, or they give up because they haven't understood something immediately!

But as the person in charge of the brain, the student needs to find ways to help his or her brain understand and pay attention long enough to learn.

Remember how to eat an elephant

The best ways to do this are to break the information into bite-sized pieces, explaining it in a way the brain can understand, and tackle it one small bite at a time – the same way you'd eat an elephant!

And don't forget the toddler-type explanation. Sometimes, you'll have to come up with an explanation (true or “near enough for now”) that can be told to the brain, to help it at least “swallow” the new information.

You can do this by using a memory aid: an action or a hand sign, a silly sentence or a poem, or singing (or chanting) a song.

People learn in different ways

This is where the different ways of learning come in: some people need to write something down to be able to remember it; others need to perform a movement or sing it or say it; some need to draw a diagram or make a model.

Just don't overload the brain by adding additional learning methods when they're not needed. And stick to using one of these aids for your student for a particular fact. You might use a different method for another fact. (Of course, if one way of learning doesn't help a fact "stick", change your method.)

If you think of trying to teach a toddler to remember the Periodic Table of the Elements, you will have an idea of how to go about teaching a brain something it's having trouble understanding.

You wouldn't say to the toddler, "Look, Johnny, the first element in the Periodic Table of the Elements is Hydrogen. Its Atomic number is 1 and its Chemical symbol is H and its Atomic weight is 1.00797."

There would be an immediate meltdown.

Instead, you'd have to make up a silly poem or song or dance (whatever way he most liked learning new things) in order for Johnny to learn the information. He's not going to understand it, so he has to just learn it off by heart. It may sound silly to the human, but it keeps the brain happy and productive. And we want to win here, so being devious can be the best way to go!

Brains store information, they don't think

There's one thing you really have to remember about brains. They're great storage devices, but they can't do the thinking for you. By that I mean - the brain is there to store information by wiring it in so you can access it. The brain's **owner** is the one who actually USES the information by thinking.

That's why you only have to worry about getting things into the brain long enough for it to be properly wired in. Only when information has been wired into the brain can the student access it sufficiently easily to be able to use it.

So, when you're first teaching something, don't worry about whether the student can understand or use that information, because thinking about information comes later.

Ask yourself the following questions

Does the number of days in the week make sense?

Do the names of the months of the year make sense?

What about the number of days in the months of the year? No, no, and no.

So we trick our brains in order to make it possible for them to learn this info. Some things can be committed to memory, by sheer repetition. Other things are learnt in spite of our brain's need for things to make sense, by teaching it a poem.

Everyone I know recites the 'Thirty Days Has September' poem when they have to work out how many days in a particular month.

When I say things don't have to make real sense to the brain, I'm not implying that the brain is stupid; I just mean that in spite of its cleverness, it has limitations. And when it comes down to it, the brain isn't in charge, the brain's owner is. And he or she has to find a way to work with their own, very individual brain, just as you would with a toddler or a puppy.

Brains like order

Just as students become confused if material doesn't make (some sort of) sense, so their brain wiring becomes confused or 'scrambled' when they're taught to do the same thing two or more different ways. I can remember having this problem with mathematics.

When I was taught long division, I was taught two different ways to do it, on the same day! Of course, I didn't manage to learn either of them, did I? Brain fry!

I constantly see this mix-it-up method of teaching in the area of literacy. Students are taught 'semi-phonics' by being told to sound out the first letter, then they are told to just say the rest of the word (instead of sounding it out, too). So students never know whether to sound something out or just say something (anything) and hope for the best!

These conflicting instructions confuse brains totally. Brains like to know exactly what they have to do. Each time they're given an instruction, they lay down wiring. If the information is taught a different way the next time it's taught, the brain lays down new wiring. Then, when the student goes to use the information, neither lot of wiring is strong enough to be used easily - so often the brain can't decide what to do, so it just 'freezes'.

When reading, this means that when the students' eyes see a letter, no super highway has been built, so students don't immediately know what to do. They can't automatically say the right sound. Instead, they resort to guessing, even if that's not how they've been taught to read. I know some teachers say guessing is a reading strategy, but they're just plain wrong.

The brain and wiring

And don't get upset or worried about the brain having to re-wire; the brain re-wires because that's its job - just as a lung breathes because that's its job!

It takes work to re-wire a brain, but re-wiring isn't unusual because that's now we learn everything. Our brains are constantly wiring and re-wiring, making regularly-used wiring stronger, and 'dissolving' rarely-used wiring. With brains "if you don't use it, you lose it" really is true.

I've seen older remedial students learn how to read in about 50 hours using material that is properly structured and consistent with the way written English works.

That works out to be about one hour every school day for a term. That time includes learning time & practice time.

Brain wiring and literacy

Sometimes, a student has so much trouble learning to read that you might wonder if the wiring **between** the different parts of the brain (rather than the wiring within the “sound” or the “visual shapes (for letter recognition)” parts of the brain aren’t working properly. And you might be right.

This problem might have been caused by:

- an accident; or
- because the brain wiring might be 'scrambled' or weak;
- the brain wiring might have been set up wrongly because the student was taught information that was incorrect; or
- the student might have been taught material that didn't make sense; or
- he or she might have been taught several different ways of doing the same thing; or perhaps
- that person just has a different way of looking at things (e.g. might be a true dyslexic or very creative).

Almost invariably, people with any type of literacy problem are labeled dyslexic, and once this happens they are often pushed aside - because it's assumed they won't be able to learn to read.

But that is very far from the truth. A person who isn't able to read properly because their brain has suffered a trauma needs to be assessed and assisted and treated; students who have scrambled or weak brain wiring, need to be re-taught so their brain can re-wire.

And if students just have a different way of looking at things (that is inconsistent with the way written English works), they need to be told, "Look, the way you're thinking about reading isn't the way it actually works. You need to stop moving the letters and words around in your head.

You can keep doing art, etc., that way; it's just written letters, words, and numbers you need to think about this way."

So why do we take years to teach reading?

It's taking years to teach students to read because most courses are entertainment-based, so huge amounts of time are wasted. And in most cases, students are still not supplied with the information they need.

Why are we wasting so much time? I think it's because literate adults assume that 'plain vanilla' courses that stick to the essentials are boring. Well, they may be boring to them, but they can already read.

Those courses aren't boring to people who are learning to read - because when they're doing a course that sticks to the essentials, students progress rapidly. And that's anything but boring!

Literate people assume that teaching someone to read is just a matter of giving them the right information. But they're wrong; remember how the brain has to practice new information, and has to have time to wire it in?

Only when the brain has got the wiring totally "super-highwayed" does it have enough energy left to concentrate on understanding what it's reading.

English makes sense (mostly)

Once a student:

- understands the Alphabetic Principle on which written English is based;
- knows the essential sound/letter combinations; and
- knows the English patterns or rules;

he or she will know English makes sense (**nearly** all the time). This is the core information everyone needs in order to be able to read English.

This foundation gives students the confidence to tackle unknown words, and equips them to become independent readers so they can work out a lot of words for themselves!

At that stage, things really start speeding up, because they realise that they don't need to be taught every word - they only need help with the weird words!

Lots of girls have reading problems, too

In spite of what's been assumed for years, girls have as many reading difficulties as boys. Because of this, full phonics courses are good for both girls and boys because those phonics teaches brains to work on literacy using the oral language parts of the analytical left brain.

So students develop their analytical and critical thinking abilities. This means that their mathematical ability improves, too, without their having to do any extra mathematics work!

Most people with dyslexia are adults who have had this problem since they were children. I've heard that many dyslexics 'grow out of' dyslexia', and manage to improve their literacy as they get older.

I really don't agree that older dyslexics have 'grown out of dyslexia'. Brain-based problems don't improve by themselves.

What's happening when dyslexic adults learn to read is that they've finally been taught using full phonics courses - so at last they've been provided with information that makes sense - no wonder they finally learn to read!

How does Phonics train the brain to read?

The information in the remainder of this ebook is largely based on material found in:

Why Our Children Can't Read, and What We Can Do About It

by Diane McGuinness, Ph.D.

Full phonics courses help brains wire properly because they explicitly teach the sound/letter combinations. With practice, each combination becomes firmly wired into the brain, and the separate parts of the brain learn how to work together at high speed.

Some dyslexics who try to learn to read as adults, fail again - usually because they're being taught using a Whole Word method, the very method that failed them as children.

Whole Word methods teach students in a way that builds scrambled brain wiring. It teaches students' brains to process a written word as a picture (instead of a symbol for a sound). These students have been told to look at the **shape** of the word.

The problem with treating words as though they are pictures is that the part of the brain (the right brain) that deals with pictures isn't designed to take note of the tiny differences between different letters, or slightly different words. So students using the picture part of their brain for literacy often reverse *b* and *d*, and *p* and *q* - because in pictures, reversals don't matter.

But in writing, the way a letter is oriented does matter, because a different orientation can mean a different letter. And the left-to-right order of the same letters matters because a change in order means you're reading a totally different word - e.g. *slit* and *silt*.

Full Phonics courses teach students to use their left brain for working with sounds and letters, so they are remembered and used in logical, analytical, and sequential ways.

So when a Phonics-trained brain sees a written word, it shunts the word to the left brain which separates the word into its individual letters (or teams e.g. *th*), then recalls which sound is represented by each. Then the brain blends those sounds together into the word, and accesses the meaning of the word.

When a Whole Word-trained brain, sees a written word, it shunts the word to the right brain which looks at the shape and length of the word, and recalls words of the right shape and length that might be relevant in that context.

But many words have identical shapes, and shapes are designed to be rotated, reversed, or tipped upside down. And many words might make sense in that context.

But these activities are not reading; reading is looking at what is on the page in front of you, decoding it, and re-constructing the meaning the author was trying to convey. (Whether or not the reader agrees with the author is another matter entirely; that's critical thinking, not reading.)

Conclusion

For the sake of your students' brains, Written English needs to be taught using full phonics because learning the sound/letter combinations is essential for reading; that's the way English was designed to be written and read.

To learn more about how to teach reading at home, go to:

www.teachreadingathome.com