



HOMESCHOOLING AND THE BRAIN

**A GUIDE TO UNDERSTANDING THE BRAIN
TO HELP STUDENTS EXCEL.**

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Executive Summary:

Don't work harder in your homeschooling, work smarter! The brain is a powerful and complex organism and as both parent and teacher, the more you understand it the easier and more effective all your efforts will be. Dig into this resource to access well-researched information on the mechanics and chemistry of the brain. Find out how to unlock your child's potential and help them access and strengthen their brain power.

Here, you will learn how to combat brain drain to avoid frustration, boredom, and that sense of overwhelm that makes learning difficult. You will also better understand the impact of the emotions on our ability to think, and you will gain some strategies for calming

those emotions and maximizing your child's ability to focus. Finally, you will learn how to engage the brain's natural filter to sift through information more effectively and transform information and skills to focus on higher-level, more complex activities that lead to greater success. Use this resource to gain valuable insight into your child's brain that is guaranteed to help nourish their fullest potential throughout your homeschooling adventure.

To Your Success!

Jessica Parnell

President, Bridgeway Homeschool Academy





Section 1.

Learning Brain Busters | Strengthen the Thinker

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How often have you heard these? “Mom! I just don’t get it!” “I am so tired!” “Do I have to?” “This is stupid!” All too often these are common phrases that disrupt the homeschool week. Whether they are frustrated, bored, overwhelmed, or just feeling antsy, their frustration often causes us to question whether we can really do this thing called homeschooling.

Believe it or not, these struggles are often a result of what is known as brain drain.

How does brain drain occur?

What I call brain drain occurs in one very small but powerful part of the brain—the Pre-Frontal Cortex (The Thinker).



The *Thinker* is responsible for all of our conscious thoughts. Here is where we think, plan, set goals, control impulses, solve problems, think creatively, make decisions, recall prior information, process new information, decide our opinions, and function consciously.

Without the *Thinker*, you would not be reading this homeschooling resource today. Why? Because to get here, your *Thinker* needed to plan, then determine where to click, what to type, and how to download this resource. Next, this powerhouse cortex helped you to control the impulse to click that appealing description that popped up on your screen and threatened to distract you, and it provided the know-how to navigate the page once you had it in front of you. And all of this happened in just seconds.

But it did not happen without energy.

One of the challenges of the *Thinker* is its extraordinary need for energy. Every time we make a decision, take in new information, engage in problem-solving, or complete a task involving conscious thought, we use up energy. And that energy is a limited resource. In other words, it can be depleted and does not always recharge effectively on its own.

Believe it or not, the brain uses up more than 20 percent of our body’s total energy.

Therefore, we feel more exhausted after a long day reading books or in front of the computer than we do after spending the day engaged in some type of physical activity.

This is brain drain.

Brain drain often results in mental exhaustion, which leads to the inability to think logically or control emotions during stressful situations.

Let’s consider this in the context of homeschool teaching and learning.

Every time our kids learn a new concept, practice skills they are still developing, or think critically to solve a problem, they use up valuable energy. And because they are using up energy, each new challenge makes the next one more difficult.

Our job as homeschool instructors is not only to teach and inspire but to find a way to organize the day and present information in a way that creates an atmosphere of success; an atmosphere that protects against brain drain.

5 Ways to Set Students Up for Success

1. Schedule Breaks Throughout the Day. One incredibly powerful tool for recharging the brain is exercise. In fact, every time you get up and move your spine, electrical charges are sent to the brain that regenerate its ability to think and learn. Scheduling regular breaks, getting deliberate about exercise before tackling those difficult subjects, and ensuring kids have plenty of time to get up and move, are just a few steps toward creating an environment of success.

RESOURCE ALERT: Need more suggestions for breaks? [Check out these fun ideas!](#)

2. First Thing First. Do you organize the school day by starting with what is easy and building up to the most difficult subjects or do you tackle the tough subjects first? Knowing that the brain is an energy sapping resource, we can help our kids out greatly by prioritizing the tough subjects first thing in the morning (or right after exercise) when their brain is most fueled, focused, and ready to learn.

3. Paint a Picture. No matter the learning style, our brains process visuals 60,000 times faster than text or speech. Furthermore, studies show that visuals improve learning by up to 400 percent. This means we can improve both our kids' ability to process information and their ability to transfer information to memory by using pictures, charts, graphs, and other visual cues.

4. Create Patterns. Although many believe they are excellent multitaskers, the brain only engages in one thinking-rich activity at a time. So, unless we go on autopilot in one area, we cannot efficiently multitask. This is why creating patterns or developing habits that help a specific skill become second nature is so important. Memorizing multiplication tables, using mnemonic devices to reinforce memory, and practicing transfers those skills and information into the Basal Ganglia for easy recall. This means kids can focus their precious energy on more complex problem-solving.

Learning to preserve working memory—the *Thinker*—is just one way to leverage the way the brain works best. When we understand God's incredible design we become better teachers, better parents, and better learners. And when we can use that understanding to inspire kids, we open the doors wide for them to succeed. So, take some breaks today, reorganize if you need to, and find a way to show rather than tell!

And don't be surprised when "I don't get it," "Do I have to?" and "This is so stupid" become "I totally get it!," "That was fun!" and "What's next?"

You will be amazed at the difference. But be aware, there is another part of the brain waiting to sabotage all your hard work.



Section 2.

Learning Brain Busters | Dampen the Reactor

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Your brain is not just an information-processing, learning, and problem-solving machine; it is responsible for the tens of thousands of connections and activities that keep you alive. Every second of every day your brain is working toward that single focused goal.

Right now, your brain is hard at work making sure your blood is pumping through your veins at just the right rate, keeping your body temperature just right and ensuring that you are getting the oxygen you need. But it is also scanning the world around you to determine what is helpful and what is dangerous to your survival and driving your reactions around what it finds.



Those knee-jerk reactions to the world around you are what we call emotions. And your ability to regulate those emotions by tuning in and making decisions is critical to your success in learning and life.

Have you ever caught yourself saying something in anger that you would never say in any other situation? Or feeling so flustered that you cannot figure out what to do next?

You have experienced *Limbic Take Over*.

But why do those emotions so significantly affect your ability to think and learn?

Believe it or not, this is all part of God's incredible design. You see, it's your Limbic System, or the *Reactor*, that warns you about the danger. And it's your Limbic System that decides whether your response should be a fight, flight, or freeze—a response that could be the key to your survival.

And when that emotional Limbic System flares, your Pre-Frontal Cortex (working memory or the *Thinker*) is immediately and proportionately affected, and meaning gets compromised. Why? Because you may need to react in a split second and thinking could delay that response.

During Limbic Take Over, you can no longer perform the same level of cognitive thinking that is possible when your emotions are in check. As a result, your performance decreases.

So, what does this all have to do with homeschooling?

Here are a few scenarios where emotions may impact learning.

- 1. Constant Struggle.** Consider how you would feel if every time you went into work you struggled, disappointed your boss or colleagues, or failed in some way. How excited would you be about getting into your car and heading to the office every day? How positive would you feel as you entered those doors? If you can already sense the heightened emotions, elevated blood pressure, and racing heart rate, you can likely already feel the impact that would have on your ability to think clearly, make good decisions, and perform. This is what kids experience when they are confronted with those difficult subjects that just seem to be impossible to learn. And those emotions make it even more difficult to conquer that struggle because the *Reactor* proportionately shuts down the *Thinker*.

2. **Defeating Words.** If you find yourself saying words like, “What’s wrong with you?” “Why can’t you get this?” or “You are not even trying!” you are adding to the sense of defeat your kids are already feeling. When your words are negative and destructive, you force them into their Limbic System and learning takes a backseat.
3. **Drama and Fear.** In today’s world, thousands of kids head off to school every day only to face social drama and fear of physical or emotional harm. As a result, their *Reactor* stands on high alert all day long. In this state, effective learning fails, and those kids quickly fall behind.

There are countless sources of *Limbic Take Over*. We all have our struggles, issues, and triggers that set off defeating emotions. But what can you do to help a child overcome those debilitating emotions?

The most powerful practice for conquering *Limbic Take Over* can be summed up in two words—self-control. If you can help your kids learn to regulate their emotions, control their tongue, and check their responses, you set them up for success. But how do we teach those skills?

5 Power-packed Strategies to Refocus the *Reactor*

1. **Name It.** When you see someone’s emotions starting to flare, teach them to overcome the *Reactor* by engaging the *Thinker*. One quick way to do this is to have them immediately name the emotion they feel. You are not asking them to tell all of the things that set off that emotion; you are simply asking them to state, “I am feeling...”. Just that
2. **Make a Statement.** One dad shared this strategy after attending a training workshop on this subject. His kids were a bit younger and could not often identify their emotions. So instead, he asked them to clasp their hands together and repeat after him, “I will be self-controlled.” This strategy works in two ways—it forces them to use their brain to do the physical
3. **Do a Simple Math Exercise.** The goal in both of the suggestions above is to engage the *Thinker*. Therefore, any activity that requires conscious thought can be

simple statement forces them to rely on the *Thinker* and dampen their emotional response. Warning: do not move into a full explanation of what happened and why they are feeling that way as that simply feeds the emotional response. Just have them name the emotion, then move on.



act of clasping hands (thus shifting attention away from their emotions), and the statement engages the *Thinker*, which automatically diffused the *Reactor*. The parent never understood the science behind it but was always amazed at how well it worked.

an effective way to dampen the *Reactor* and get back on track. Doing simple addition, counting, reciting a verse, or even picturing a favorite activity or place provides that avenue to re-engage the *Thinker*.

4. Teach at a level and in the way your child learns best. When your kids struggle with a particular subject, there is a wonderful opportunity for growth. This tactic starts with knowing how they learn best and where they are academically. By teaching them subjects according to how their brain naturally retains information, those tough subjects can be presented in a motivating and understandable way. By approaching learning this way (i.e., their way) you appeal to their specific *Thinker*. Interested to know more about how your child learns? [Take Bridgeway Academy's Learning Style Assessment here.](#)

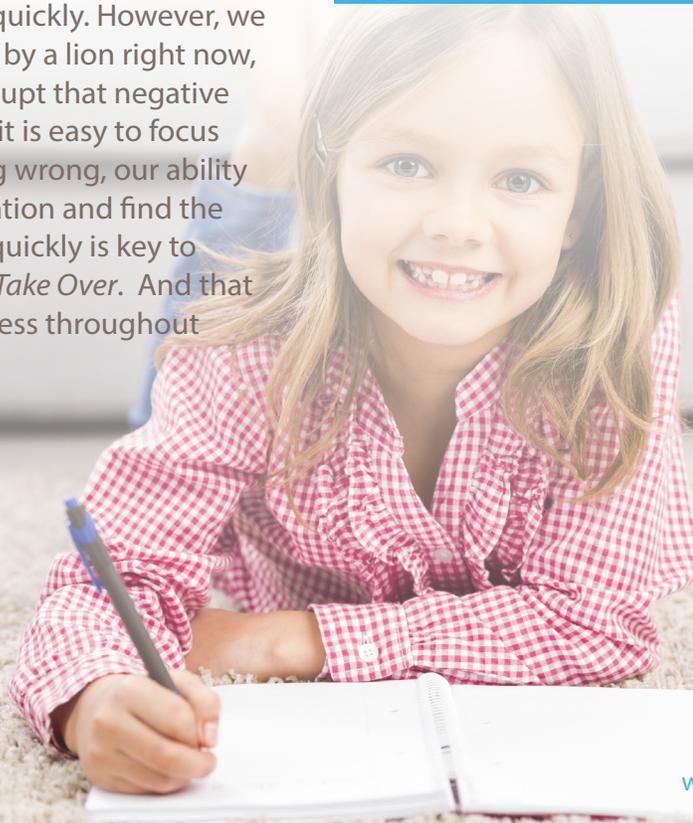
5. Reappraise. Our brains naturally go to the negative (you will learn more on this in the next section). We do this as a part of basic survival. If we see the bad, we sidestep it quickly. However, we aren't being stalked by a lion right now, so we need to interrupt that negative spiral. Even though it is easy to focus on everything going wrong, our ability to reappraise a situation and find the potential positives quickly is key to overcoming *Limbic Take Over*. And that ability is key to success throughout

our lives; thus teaching our children to reappraise, to essentially become more optimistic about life, quiets that threat response and allows The *Thinker* to re-engage.

This training takes time, effort, and piles of patience. But if you can avoid the temptation for fast-paced parenting and take the time to help your kids develop these skills essential to success in school and in life, it will pay off exponentially.

Conscientious parenting is a powerful tool for helping your kids develop their filter, another incredibly important part of the brain that you have a significant role in developing.

RESOURCE ALERT: Check out why learning style matters and how it directly ties to your child's *Thinker* by [downloading our free resource.](#)





Section 3.

Learning Brain Busters | Engage the Filter

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We began this journey together by discussing strategies for leveraging the Pre-Frontal Cortex, the *Thinker*, to maximize learning potential. From there we learned the power of emotions and how to keep the Limbic System, also known as the *Reactor*, from taking over to help your kids overcome frustrations and get back on track to learning success.

Now we shift the discussion to a small but powerful part of the brain that you as parent and teacher have the power to influence significantly. Ready?

The Reticular Activating System (RAS) is located at the top of the spinal column in the brain. Approximately the size of a little finger, the RAS is a robust filter for your brain, sifting through the millions of bits of information your brain encounters to determine what is important versus what you can ignore.

Stop reading for just 10 seconds to do a quick test of the *Filter* at work in your brain. Focus for just 10 seconds on the screen. What images did you dismiss? What ads or images showed up that you didn't even notice? What colors got lost in your determination to jump in and start reading? What sounds are going on around you right now that you blocked out to concentrate and digest what you were learning?

If you are like most, you feel amazed at the information the *Filter* eliminated on your behalf—empowering you to focus on the immediate task at hand—this resource.

Let's just consider for a moment the power of this amazing processor. Designed to control where you place your attention, the *Filter* draws you to what you are interested in, whether that interest is good or bad. Also, its programming is biased by your beliefs. In fact,

it is wired to spot and seek out information that supports your beliefs.

Think about this regarding teaching and parenting. What your kids believe about themselves becomes what they notice. If your daughter believes she is terrible in math, she will notice every time a sibling beats her in a verbal math problem and she will completely miss the time that she was able to answer 22 out of 25 questions correctly.

If your son tells himself he cannot write, he will sit staring at a blank page for hours unable to begin the writing process because he believes, at his very core, he cannot possibly write anything worth reading. Meanwhile, he is likely to miss his success when he could quickly draft a response to a question about a topic he felt competent to answer.

Kids don't only have to overcome their self-talk. They are also strongly influenced by what you notice about them. If you have programmed your filter to think of your teen as a slob who doesn't help around the house, you will notice every single time they leave the room without helping with the dishes (and you will likely point it out). If you believe your oldest has a bad habit of lying, you will catch every lie and miss the many occasions when the truth came right away. And because you take your role as parent seriously, you likely address that inappropriate behavior. But if you find yourself labeling them as "slob" or "liar," you are also programming their filter to identify themselves with those labels. You root them in the very





issues you are hoping to help them overcome. Our goal as parents is to give our children the wings of opportunity, not anchor them to perceived weaknesses.

But take heart! You can leverage this powerful region of the brain to help your kids develop character, motivation, and academic success by simply programming it to draw their attention to what is most important. Let's look at some ways to improve your job as both parent and homeschool teacher.

4 Methods to Reinforce the Parent Teacher Role

1. **Character Development:** Define the character you want to see your child develop. Then notice it and point it out in a positive way every single time you see it demonstrated. A simple, "Wow! I am so proud of you for sharing!" or "Thank you for telling the truth. I appreciate that you are honest," goes a long way in programming your child's *Filter* to look for opportunities to demonstrate that behavior again.
2. **Positive Reinforcement:** Point out the successes. If your child is struggling with a particular subject or skill, you are likely already seeing discouragement and frustration. Why? It's not just the struggle; it's their *Filter* noticing every time they make a mistake. Help turn that around by pointing out every success and programming their *Filter* to see success rather than failure.
3. **Tune in The Reactor:** Be aware of what your kids feed the *Filter* in their brains. Remember, it will draw them to what they find interesting. If they (or we) are

filling their minds with destructive ideas, behaviors, language, and other negatives, their filter will continually re-tune their attention to those things. And the more they pay attention to those things, the stronger they hold on them.

4. The Pen is Mightier Than the Sword:

Have your kids write down their goals. Yes, with pen and paper to get that dual-processing of the brain going. Leverage the power of the *Filter* to teach goal setting. When your child sets a specific goal, their internal processor immediately goes to work figuring out how to accomplish that goal. Even better, it subconsciously identifies people or activities that will impact their ability to succeed. Why? Because this *Filter* part of the brain supports their beliefs. So when they set a goal—and even better, when they write it down—their brain goes to work making that belief a reality. Now that's powerful stuff!

The *Filter* is a powerful tool that we can use as both parents and teachers to help our kids develop into healthy adults. But it takes commitment as well as deprogramming any negatives while taking special notice of the positives in kids to turn them around. So dedicate a moment to write down their strengths, the character traits you want to encourage, and the incredible aspects of their personality that make them who they are. Then, look for opportunities to tell them how amazing they are at every opportunity.

Next, learn to "Leverage the Doer" to help students build their memory, positive habits, and more!

RESOURCES ALERT: [Check out these Tips for Raising an Optimistic Child.](#)



Section 4.

Learning Brain Busters | Leverage the Doer

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Earlier we covered how to *Strengthen the Thinker*. The *Thinker* is responsible for planning, setting goals, controlling impulses, solving problems, thinking creatively, making decisions, etc., uses up a lot of energy. And we shared a few strategies for strengthening this incredible resource from scheduling brain breaks to planning your day in the best possible order. However, one of the most effective strategies is to create patterns, to embed or automate specific information and skills, so that you don't need to draw energy from the *Thinker* to do them continuously.

Which brings us to this final topic on how to leverage the *Doer*. Learn how to transfer information and skills into the Basal Ganglia—our *Doer* section of the brain.

Try this little task. Finish this song, “The best part of waking up is...”, could you do it?

Or, what if I started this jingle, “Two all-beef patties, special sauce, lettuce...”, would you know how to finish that one?

If you answered, “Folgers in your cup” and “cheese, pickles, onion on a sesame seed bun” then you have just engaged your *Doer*. It has likely been years since you heard either one of those jingles and yet you were able to recall them almost without effort.

The incredible power of the *Doer*.

Your Basal Ganglia are central to how the brain stores habits and routines. And when you go into habit mode, your brain can shift from taking energy from the *Thinker* to utilizing the much more efficient basal ganglia—your *Doer*.

What's even more interesting is neuroscientists have learned that once your brain encodes a pattern or habit into

your Basal Ganglia, it never fully disappears. Therefore, you can recall a song you haven't heard in years, ride a bike without effort even if you haven't ridden one since childhood, and cook an amazing meal for the entire family, even while lost in thought or conversation.

How do we leverage this powerful region of our brains for learning? Even better, how do we create those patterns, habits, and memories that free up the *Thinker* to focus on the higher-level, more complex activities that lead to success? Here are four great ways to get started.

- 1. Create Patterns.** The Basal Ganglia are designed to execute patterns. Once you create a pattern, your *Doer* can drive the process. For some, only three repetitions of a routine are enough to embed something into the Basal Ganglia and thus make it a long-term habit; for others, it may take much more repetition and review. But helping your child develop routines that can repeat over and over again helps them become more efficient and able to tackle the next challenge. Some simple routines include how to begin and end the school day, where to store their books, or the

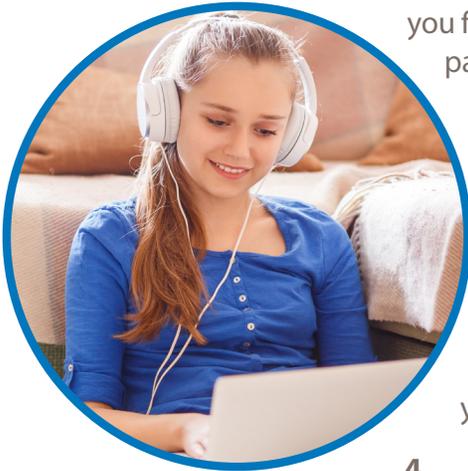


step-by-step process for tackling a specific math problem. Setting up your homeschool environment is a great place to start.

2. Memorization. You can also leverage the *Doer* by committing things to memory. Memorizing those multiplication and division facts so they become second nature helps you focus on more complex algebra problems, knowing laws of motion or the order of operations allows you to focus on how to solve the problem at hand, and memorizing prepositions makes writing and diagramming easier. Do you get the picture? Focus on committing to memory those things that are required for more complex operations. By powering up the *Doer*, you give yourself a head start.

3. Music. One fantastic way to create patterns or memorize information is to set it to music. Remember those little jingles you were able to finish? That was your *Doer* kicking in. Music ignites learning. And where but in music do

you find consistent patterns, catchy melodies, rhythm, and rhyme? Find a way to set important information to music and get ready to be amazed at what your child can learn!



4. Practice. With today's technology, we have the incredible ability to add brain training to our daily routine and firm up important cognitive abilities.

Desktop Apps:

- **Mind Games** — Designed for younger kids, Mindgames.com includes all 13 of Mindware's brain exercising games. Available online. (Warning--this one does include quite a few ads.)
- **Fit Brain Trainer** — Practice for your brain's working memory (prefrontal cortex) and processing speed.

Mobile Apps:

- **Memory Trainer for Android** — Memory Trainer works out your spatial and working memory, focus, chunking, and concentration skills.
- **Peak** — Designed for all ages, Peak games are short, intense brain games that challenge your focus, memory, problem-solving, mental agility, and processing skills. The free version includes a short workout each day.
- **Lumosity** — Find this one online or as an app called Lumosity Brain Training. Lumosity is designed to work out your brain a little each day and improve working memory, visual attention, fluid intelligence, and executive function (your braking system). They do include a free version, but there are in-app purchases to upgrade to the full version.

When you make brain training part of your daily routine you increase cognitive abilities that help sharpen the brain. As stated above, creating automated, embedded patterns and routines leverages the *Doer*, which preserves the *Thinker*, which often results in better control of both the *Filter* and the *Reactor*!



Section 5.

The Learning Doesn't Stop Here | Best Homeschool Resources

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Now that you're empowered with how the brain works to make your student unstoppable, you shouldn't stop your own learning on this fascinating education topic. Use the resources in this resource to re-engage your distracted, overly emotional, or unfocused learners. You now know how they think and what will help them learn! This knowledge is an exciting and powerful tool in your homeschool parenting toolbox.

Bridgeway Academy stands as your dedicated partner to be by your side in strengthening your students' ability to grow and learn at a rate that surpasses traditional schooling by leaps and bounds. We promise you'll love learning with us. If you'd like to learn more, we're all about teaching. Access more great tips on our [Bridgeway Academy Homeschooling Help Blog](#) and enjoy the following links to expand your learning as well.



1. <http://www.artofmanliness.com/2012/11/20/power-of-habits/>
2. <https://labs.psych.ucsb.edu/ashby/gregory/reprints/sdarticle.pdf>
3. <http://www.neurology.org/content/32/5/514.extract>
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