

SEWBaD: The Five Secrets for Preparing the Brain for Learning

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Introduction

The rules of biochemistry are clear. We are what we eat. It is remarkable that our bodies and brains can accept enormous variations in their input and still function adequately. The variety and quality of diets humans are adapted to eat is enormous and part of the reason for our success in evolutionary terms. Other species, unable to adapt to changing climates or diets have long since died out or will soon go as our climate changes more.

Not all inputs are equal. A racing car will run on petrol, but high octane fuel allows it to perform better and more efficiently. It is the same for us and our children – we really need quality inputs to maximize our outputs.

Much has been written about this and there is much we can do. For a start though, if we concentrate on the following five ground level strategies we're well on the way to optimization. Which five? Sleep, Exercise, Water, Breakfast and Diet – *SEWBaD*. Brain compatible education concerns the 'learnability' of material. Five is a manageable chunk for most of us to manage, three or four is best. To help *Breakfast and Diet* are linked, so there's really only four. Why SEWBaD? SEWBaD is an acronym that is easy to remember and therefore makes the learning a more powerful process.

Here are the five secrets in preparing the brain for learning most effectively.

1. HAVE ENOUGH SLEEP

We all know what sleep is, but why is it important? And how much do we need? Experts differ in their conclusions. Some things are clear though. Sleep occurs in cycles known as ultradian rhythms which are simply rhythms in two types of sleep – REM and non-REM. REM stands for Rapid Eye Movement. REM sleep occurs in the last part of each sleep cycle, which are about 90-110 minutes long. It is during REM sleep that our brains organize and store some memories – particularly math concepts and language. The last stages of REM sleep in the early morning before waking are particularly vital for learning.

Non-REM sleep is rest sleep, and it's needed for us to be alert the next day, but some memories are formed during this time also.

If we miss out on sleep or interfere with sleep cycles we can change the neuronal networking in the brain. This can have a possible negative effect on academic potential and behaviour.

Some Common Sleep Disturbers

School

During adolescence the body clocks change with the hormones and teenagers may not get tired till after 11pm, but need to sleep late. This means their REM periods may be cut short by school. This is one of the ironies of education. We may be waking our kids to go and learn at school but providing the learning opportunities when their



brains are not switched on. Adolescents need later starting times than younger kids. Secondary schools that start after 9 am are more compatible to teenagers' brains.

Movies / video games

Some researchers believe that stimulating videos and/or video games during the day provides strong competition for neuronal space and processing during REM sleep. Kids might learn the script of a film or cartoon before learning new material in the classroom.

Light:

Light affects the pineal gland and the production of melatonin, the hormone that puts us to sleep. People who have flashing lights, computers or TVs running in their bedrooms, digital clocks etc, may have disturbed sleep without knowing it. Some people are also disturbed by the little red 'standby' light on many electrical items.

Telephones and friends

Text messages at any time of the night from friends or spam wake people up. Reading and answering them is worse. Phones should be left outside the bedroom if this is a problem.

What to do about sleep:

Parents must ensure children have constant and calming sleep routines. They need sufficient sleep – 8 hours plus whether they know it or not. Sleep debts can build up over the week so people should be allowed to sleep reasonably late on weekends as a catch up.

2. HAVE ENOUGH EXERCISE

Having regular exercise is a no-brainer. The brain uses 20-30% of the oxygen taken into the body anyway, but increasing the blood flow increases the food, especially glucose, and oxygen supply to the brain. What food does is supply the energy and building blocks required by the cells for efficient functioning and growth – a process that produces toxic waste. What oxygen does in part is to grab the toxic ‘free radical’ electrons produced in cellular chemistry and get them out of the system in the form of carbon dioxide. Exercise, as John Medina puts it, “boosts the mind”. It pumps in the good stuff and clears out the bad at a faster rate.



Everyone should have 20 minutes of vigorous exercise each day at least for healthy brain function and a break for exercise every 30 minutes while studying is beneficial.

3. DRINK MORE WATER

Water is vital. About 80% of the brain is water. It has a number of functions. In the blood it allows the transport of the food and oxygen and waste products in and out of the brain. It keeps the acidity level of the brain steady and lowers the levels of stress hormones such as cortisol.

How we drink our water is important. Much can be found in food and soft drinks but beware – drinks such as fruit juice, soft drinks, coffee and tea are diuretics. They make you produce urine. Worse, they do not provide neutral pH water to the brain because the sugars in them bind to the water and the brain treats them as food. For healthy brain function we should hydrate just with drinking water.

Teachers should allow easy access to drinking water for their students and caution against sweet drinks as a substitute.

4. PRIORITISE BREAKFAST

Breakfast is the most important meal of the day for healthy brain function. A good breakfast builds energy levels for the day, improves memory, enhances behavioral functioning and decreases susceptibility to anxiety. The quality of the food eaten has a direct affect on the brain. Foods with a high glycemic index (GI) are broken down quickly and provide a sugar boost to the brain that people may like. Sadly this may only last an hour or two before we need another boost. Low GI foods in contrast can provide the fuel for functioning throughout the morning.

Teachers can help their students understand the value of eating a good breakfast. Breakfast needs to be a priority of their day.

5. HAVE A GOOD DIET

Diet choice creates immediate and long term issues relating to brains. Teachers often say “you can’t teach hungry kids”. Throughout the day parents can help their kids by ensuring adequate protein, complex carbohydrates, vitamins, minerals and water make up the menu. A simple rule of thumb - reduce sugar and lower GI. Also children do not need salt or MSG added to food and the wrong fats and cholesterols are the time bombs of our diet.



These five rules are simple enough on paper. Dealing with children is not so simple. Many times I have asked a group how many had not had breakfast that morning and there is always quite a few and later for recess they’ll be drinking soft drinks and eating chips. When kids have headaches in class I have asked when they last drank water. Often it’s been a number of hours, if at all that day. And *sleep!* Studies show that of kids with behaviour problems, *100%* had sleep issues. Behaviour affects learning, not just of the individual, but in the others he or she potentially disrupts. All five rules are important, but I suspect having enough sleep may be the leader.



References:

See the article on sleep at www.braincompatibleeducation.com

Dr Sarah Blunden at www.sleepeducation.net.au

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Derek Pugh is an experienced Principal and teacher in both Australian and International Schools. He now runs workshops in Brain Compatible Education for students, teachers, parents and corporate groups worldwide. Workshop participants discover the

latest in neuroscience and why knowledge of the brain is a powerful tool in education; the 'SEWBaD model' of preparation for learning; what brain 'plasticity' means to education; individual learning profiles and how to use them for effective learning and teaching; how to teach or learn efficiently; and models of brain operation and function.

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