

A story to read  
with children about

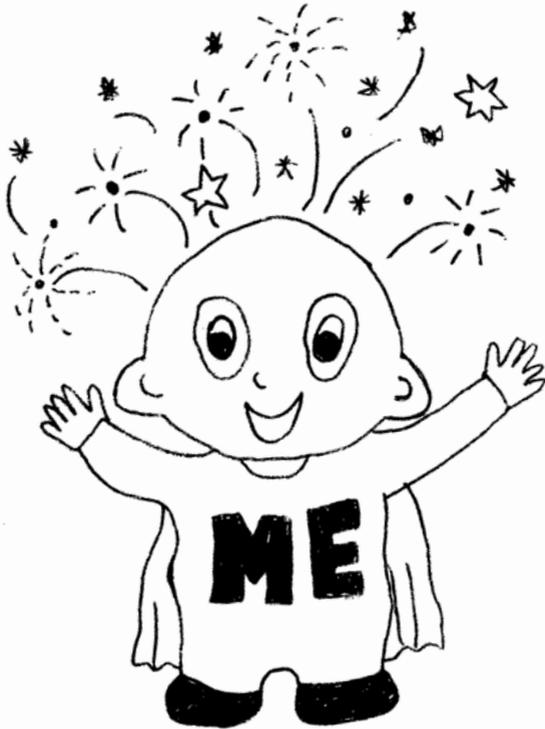
# MY BRILLIANT BRAIN



Written by Linda Joyce Bruce and Lisa Cohen  
Illustrated by Shifrah Getz

# MY BRILLIANT BRAIN

I can discover and learn things anew, thanks to my brain and what it can do!



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# Note for Mom, Dad and Caregiver

During this story and the family chats and games that follow, we are going to be learning about our brilliant brains. Understanding how the brain processes information motivates us to become aware of, and manage our emotions and make life-style choices so that we feel calm and content and interested in learning.

## THINGS WE ARE GOING TO LEARN ABOUT:

### How my brain works

- My brain is the most powerful tool I have. It controls everything I do, learn, feel and even imagine.
- My senses (sight, hearing, touch, taste and smell) pick up information from the world around me and send it via nerve cells called neurons to my brain.
- I have 'three brains' inside my one brain! My instinctual brain, my emotional brain and my thinking brain.
- If I want to think, learn and be creative, I need to get information past my instinctual and emotional brains to my thinking brain.
- This happens best when I am calm, content and interested.
- I want to understand how my brain works and look after it.
  
- **My instinctual brain and RAS – Reticular Activating System**
- RAS (reticular activating system) is the sorting and filtering system in my instinctual brain.
- RAS is most concerned with my survival.
- It sorts through all the sensory information sent to my brain looking for any threats.
- RAS feels threatened when too much information comes in all at once – information overload.
- If there is a threat or information overload, RAS activates my 'flight' or 'fight' instinct...so that I ACT.
- If I want to get information passed on from RAS to my thinking brain I need to learn to focus my attention.

### My emotional brain

- My emotional brain checks information to see how I FEEL about it.
- If I am calm, content and interested, the information is sent on to my thinking brain.
- Strong, negative feelings like worry, stress, fear, anger or boredom create emotional overload and the information gets sent back to my

instinctual brain where I take flight or fight.

- If I want to get information past my emotional brain, I must listen to my feelings, learn to cope with stress and think positive thoughts.

### **My thinking brain and neuroplasticity**

- My thinking brain allows me to THINK, learn, solve problems and be creative.
- The more I use the information in my thinking brain, repeat it or practise it, the better I remember it.
- This is called neuroplasticity and it is why my brain is always changing and becoming cleverer as I learn and remember new things.

Here are some useful tips to assist you in making life-style choices that promote optimal brain development and assist your child in developing the skills to manage information and emotional overload so that learning on all levels (mental, social/emotional and spiritual) can be promoted and enjoyed.

- Your child's brain operates optimally when all three parts (instinctual, emotional and thinking) are equally developed, valued and engaged.
- The thinking brain only reaches full development in a person's twenties. It is a long process that is dependent on the healthy development of the instinctual and emotional brain.
- While the thinking brain responds to stimulation, repetition and practice, the emotional and instinctual brain thrives off unstructured, self-motivated, imaginative, independent PLAY. Ensure that your child's life style allows time for both formal learning and free play in equal proportions.
- The thinking brain loves activities like reading, doing puzzles, playing memory games, playing structured sport and learning new things.
- The instinctual and emotional brain loves to play, the more unstructured and imaginative, the better.
- Watching TV or playing computer games does not promote brain development. They are fine for taking a break and enjoying some rest and relaxation, but should not be done for prolonged periods of time.

## Managing information overload

- Balance your child's schedule so that there is time for mental stimulation, practice and structure, but also time for free, unstructured play.
- Teach your child to manage information:
  - Break down big and overwhelming tasks into small steps.
  - Write the steps down (list making).
  - Concentrate on one task at a time, starting with what is most important.
  - Take breaks when your thinking brain needs a rest.
- Observe your child's concentration span. This varies from child to child. When they have reached their limit, allow them to enjoy some free time.
- Teach your child to minimize distractions before starting an activity that requires concentration, like homework. Encourage them to go to the loo and have a drink of water or turn off the TV before they start.
- When you want your child to do something, do not bombard them with too many instructions at once. If you have to give them a list of instructions, write them down so they can concentrate on one task at a time. For example: Make a chart for daily chores, display it for your child to see, and encourage them to tick off each chore as it is completed.
- Establish routines. For example: before bed, you pack for school, put out your uniform, brush your teeth and read for twenty minutes.

## Managing emotional overload

- The main causes of emotional overload at schools are:
  - Too much work or pressure to get high marks.
  - Fear of consequences like being shouted at or punishment like detention.
  - Social issues like bullying, feeling left out or being isolated (having no friends).

- Observe your own reaction to test marks and assessments. Before commenting, ask your child how they feel about their result. Do they think it is a fair reflection? Do they understand the work they got wrong? Do they need help with that? Would they like to have done better? What could they do differently for the next test if they want to do better?
- Shift the focus away from the marks to valuing and rewarding improvement, effort, perseverance or consistent, hard work.
- Teach your child to learn from consequences and punishment rather than fear them. If they are fearful, support them. Talk it through so they can better understand how they created the consequence and what they can learn from it.
- Make time each day to chat with your child. How was their day? What did they enjoy about school? Did anything bother them during the day? These casual chats will help your child process their emotions and deal with any social issues. If your child is struggling with issues you feel unable to cope with, ask the school counsellor for help.
- When you observe your child becoming emotionally overwhelmed, encourage them to breathe, slow down and think before they act.
- Teach them helpful solutions to feeling overwhelmed and emotional. For example:
  - Ask someone you trust for help.
  - Do something you enjoy.
  - Play with your friends.
  - Talk to someone about how you feel.
  - Ask for a hug.
  - Run around the garden and get some exercise.
  - Listen to a song that you like.
  - Take a break and read a book or have a cup of tea or drink of water.
- Make sure your child is getting sufficient sleep. The brain and body needs to rest.

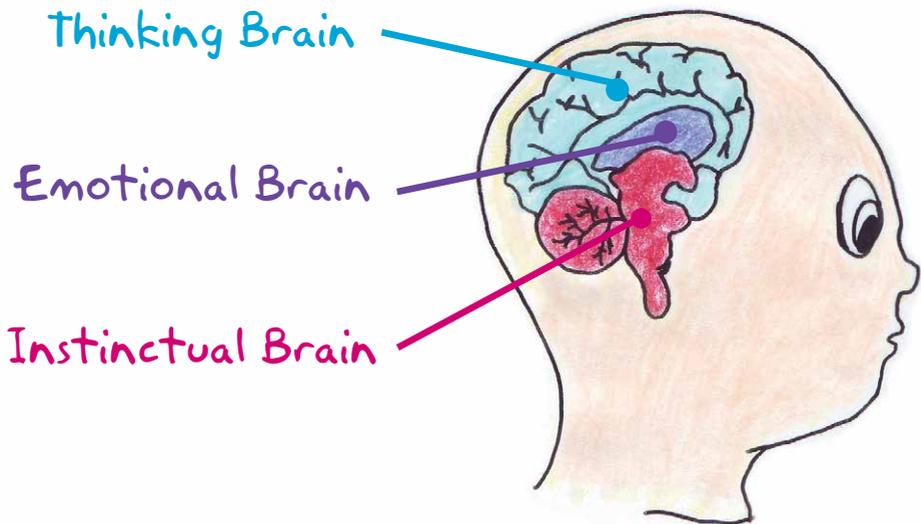
## Chapter 1:

# Muckle's magic marble

“Wowzer!” Bru’Me was still thinking about his amazing body as he slipped his pyjama top over his head. “It’s so incredible. How is it possible that every single cell, and every single muscle and every single organ knows exactly what to do?” he asked Mickle and Muckle who were sitting on his pillow.

“That would be thanks to your totally brilliant brain,” said Muckle. “Here’s an awesome fact. Did you know that your eyes can see your nose, but your brain knows to ignore it? Imagine having to walk around all day trying to see past your nose,” laughed Muckle.

“And, did you know,” added Mickle, “that your brain is actually three brains in one? You have an instinctual brain, an emotional brain and a thinking brain. That’s why you can act, feel and think. Your brain is the most powerful and extraordinary organ in your body,” Mickle sighed dreamily.



Bru'Me didn't respond. All this talk about brains was making him think about school. He worried a lot about his schoolwork because he struggled to concentrate. Something always pulled his mind off in a direction opposite to where the teacher wanted it to be. Musa, Sammy and Thandi all got better marks than him.

"Not all human brains are powerful and extraordinary," he mumbled. Muckle noticed Bru'Me's distress. "That's where you are wrong, brother. The most wowzer thing about your brain is its neuroplasticity."

"Neuro what?" asked Bru'Me.

"New-row-plas-ti-city!" laughed Muckle. "It means that your brain is changing and growing all the time. If you understand how to use your brain, you can make it cleverer. The most important thing is to learn how to get information past your instinctual and emotional brains to your thinking brain so that the magic can happen," said Muckle encouragingly.

Bru'Me sighed. "Well, I wish I knew how to get information to my thinking brain and make it stay there."

"You seem to have no problem remembering your lines when you are on stage," Muckle responded with a twinkle in his eye.

"Wow, Muckle, you're right." Bru'Me was intrigued. "Why does learning my lines for a play feel so easy, but other things like maths so hard?"

"Humans are intelligent in many different ways," Muckle started to explain but Bru'Me interrupted him. "I know that! The wild fig tree taught me all about the different 'smarts' back in grade 2."

Muckle continued, "So when you are working with one of the ways you are naturally smart, it feels easy, but..."

"... the rest can feel hard," said Bru'Me glumly.

“It doesn’t have to be hard, brother,” said Muckle reassuringly. “If you understand how your brain works, you can become even better at the things you are already good at, and learning the things you find hard can become a little easier... and much more fun.”

Bru’Me thought about what Muckle said and then jumped up in excitement. “Imagine if I could look inside my brain and see how it worked!” he exclaimed, his eyes shining with interest.

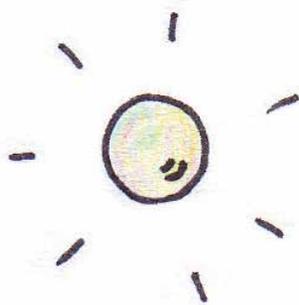
“Way cool! What a totally rad idea. You have a rocking imagination Bru’Me,” enthused Muckle. He fished around for something in his pocket. “Put your head down on this pillow,” he instructed, before jumping onto Bru’Me’s cheek and marching up the bridge of his nose. Bru’Me squinted and saw a small, transparent marble in Muckle’s hand. Muckle reached up and pressed the marble into the space between Bru’Me’s eyes.

“Hey, what are you doing?” protested Bru’Me.

Muckle ignored Bru’Me’s protest and continued pressing. “UUUggghhhh... wait a minute... nearly there... just a little harder. Whew! There you go. It’s perfectly in place.”

“What’s in place?” asked Bru’Me, lifting his hand to his forehead. He felt a little bump just beneath his skin.

“You said you wanted to see inside your brain,” said Muckle. “This little marble is going to help you do just that!”



## Chapter 2:

# Welcome to Your brain

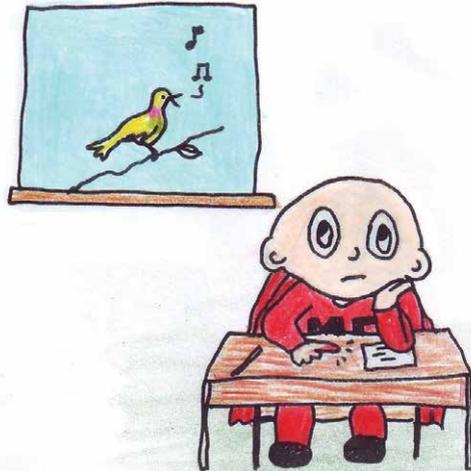
The following day did not start well for Bru'Me. He overslept and was forced to skip breakfast. On the way to school he remembered that he had not finished his homework and, to make matters worse, he had forgotten his sports togs at home. By the time he arrived at school he felt very distressed. He sighed and opened the lid of his desk.

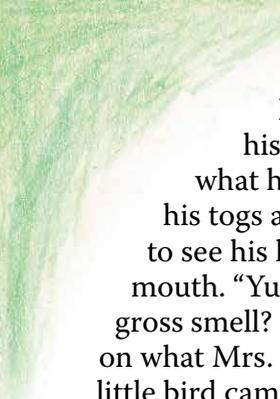
“Ouch!” he cried as a splinter forced its way under his fingernail. The day was going from bad to worse.

Mrs. Haggie, the maths teacher entered the classroom. “Morning class, today we are going to continue with the three times table.”

Bru'Me groaned quietly. He hated times tables. As hard as he tried, he couldn't remember them. It was just one big muddle.

Mrs. Haggie began to talk as she wrote the three times table up on the board “ $1 \times 3 = 3$ .  
 $2 \times 3 = 6$ .  $3 \times 3 = 9$ .”





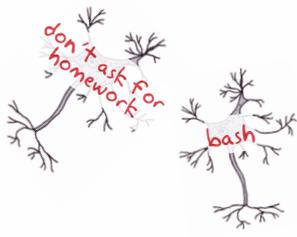
Bru'Me tried to listen but his finger was throbbing and his tummy was grumbling. He was still worried about what he was going to say to his sports coach about forgetting his togs and he was praying that Mrs. Haggles wasn't going to ask to see his homework. Bru'Me stuck the end of his pencil into his mouth. "Yuck! That tastes disgusting," he thought. "What's that gross smell? Has someone just farted?" He was trying to concentrate on what Mrs. Haggles was writing on the board when a beautiful little bird came and sat on the branch just outside the window. Mrs. Haggles's voice drifted away... far, far away.

The morning had been so busy that Bru'Me had forgotten all about the marble between his eyes. Now, an irritating itch brought his attention back to that exact spot. Bru'Me gave it a good scratch, which did nothing to ease the itch. So he pressed his finger hard against the marble. "That feels better," he thought as a warm sensation spread across his forehead and he closed his eyes.

When Bru'Me opened them again, everything was different. Instead of his small, square classroom, he was looking into a big, round room. The floors, ceiling and walls were all spongy and pink.

"Welcome to your brain," laughed Mickle, who had made a mysterious appearance inside the room. "What do you think?"

"But... a... a... what... a... how... a... a...?" stammered Bru'Me. "Yes, you probably are a little confused," continued Mickle. "When you pushed that little marble between your eyes, you switched them around. Instead of looking out into the world, you are now looking through the back of your eyes into your brain. It's brilliant! Such a nifty little device."



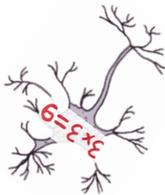
## Chapter 3:



# General RAS and the instinctual brain

Bru'Me looked around the room. There was a big door at one end with the words 'Thinking Brain' carefully stencilled across the top. In the centre of the room was a desk and chair. The desk was covered in a bright, pretty tablecloth with the words 'Emotional Brain' decoratively embroidered across the front. Bru'Me was wondering who sat there when he was distracted by a sudden burst of activity and noise. He looked for the source. It was coming from a big gate at the bottom end of the room. The gate had a very bold sign above it that said 'Instinctual Brain.' Next to the gate were two porthole-shaped windows, one labelled 'Fight' and the other 'Flight.' A group of octopus-like creatures with round bodies and delicate, wavy arms were desperately trying to get in through the gate.

The octopus-like creatures shouted and banged against each other, "Sore finger... bash...  $3 \times 3 = 9$  ... crash ... feed me ... bang ... beautiful bird ... clang ... I'm tired ... bash ... don't ask for homework ... boof ... yucky taste ... clank ... gross smell ... crash."



A booming voice rose above the din. "Attention. Information overload. I repeat, information overload. Going into survival mode."

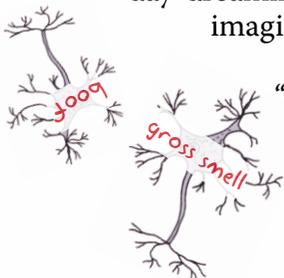
The enormous voice belonged to a big, burly man dressed in a very neat and smart army uniform. His jacket was dripping in medals and the badges on his sleeve suggested to Bru'Me that he was very important and influential. "Order!" he shouted, "All neurons fall into line." The wispy creatures immediately obeyed his instruction and organised themselves into an orderly row. The army man opened the gate, scooped them up and dropped them through the window labelled 'Flight'.

Everything went very quiet and the big army man let out a sigh of relief.

"What's happening now?" asked Bru'Me. "Why has it gone so quiet?" He was expecting Mickle or Muckle to answer but the big army man turned to him instead. Bru'Me read his nametag. It said 'General RAS'. "You're day-dreaming," said General RAS.

"But I can't day-dream in maths or I will never remember my times tables," protested Bru'Me angrily. "Why did you make me day-dream?"

"Now Bru'Me," said General RAS sternly. "I am simply doing my job. I work in your instinctual brain. All the information that your senses gather and send to your brain must first pass through me. I sort and filter the information and decide where to send it. My greatest concern is your survival and so I inspect every one of those noisy neurons searching for potential threats. In the case of an 'all-clear' I send the information on to your emotional or thinking brain. But, if I find a threat, I act immediately and engage your instinct to 'fight' or take 'flight'. You prefer to take flight, and run away from the threat by day-dreaming." General RAS chuckled. "You have such a lively imagination!"



"There was nothing that really threatened my survival during maths. I was a bit hungry and had a sore finger. That's not life threatening," argued Bru'Me.

“You are quite right, Bru’Me. But, I take my job very seriously, and if too much information comes in all at once I feel overwhelmed and call an information overload. As you just witnessed, that means I throw everything through either the ‘Fight’ or ‘Flight’ window.”

“And then I day-dream,” Bru’Me finished the explanation for General RAS. “I hate my imagination. It only gets me into trouble,” grumbled Bru’Me.

“Trouble?” snorted General RAS. “I think not! Your imagination is a true gift. Apart from being an endless source of creativity, it is essential to my training. How do you think I know that it’s not a good idea to roll on a prickly cactus, or walk up to a wild lion or eat cow dung? When you imagine what might happen to you when you do those crazy things, I learn from it, and then I can stop you from doing them in real life!”

“Then I have a problem General RAS. How do I keep my imagination, but stop day-dreaming so I can do better at school?”

“That is a very good question. The answer is to learn to get important information past me and into your thinking brain! Perhaps Mickle and Muckle can take you through my three-step programme,” said General RAS with a wink.

He gave Bru’Me a quick, sharp salute, clicked his heels and disappeared. Bru’Me, startled, found himself back in his classroom. The bell rang and his classmates filed out.

“Right!” said Mickle. “We don’t have much time so here are the General’s three steps to get important information past him to your thinking brain.”

“Step number 1: There is a time to imagine and let my thoughts run free, and a time to concentrate on what’s in front of me. Concentration and imagination are equally important, Bru’Me,” explained Mickle.

“But, if you want to learn something new, you have to concentrate.”

Bru'Me repeated the statement slowly making an effort to really understand it. "There is a time to imagine and let my thoughts run free, and a time to concentrate on what's in front of me."

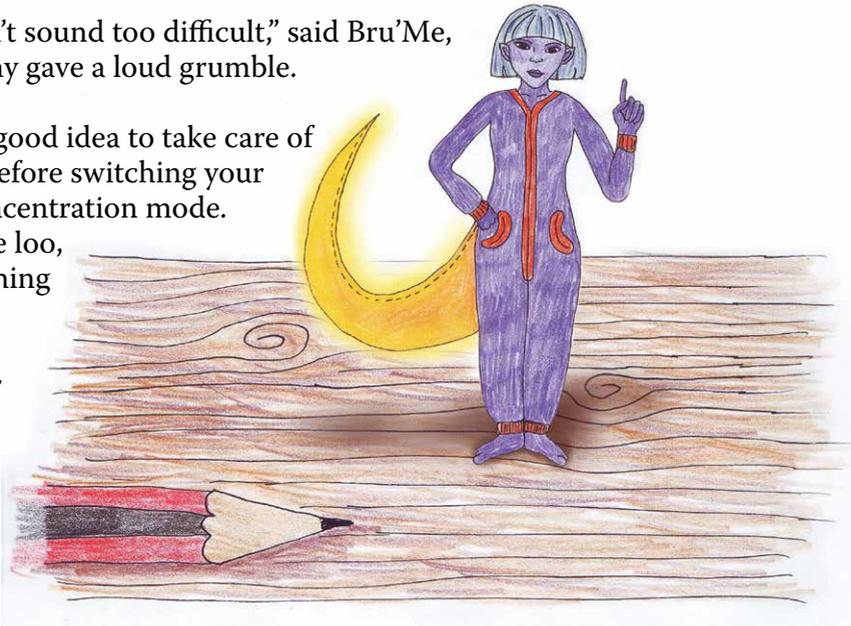
"Good," continued Muckle. "Step number 2: Which of my activities need me to focus and when can I play the hocus pocus? Which lessons and activities during your day require your concentration?" asked Muckle.

"Mmmmmm, I probably need to focus during Maths, English, Afrikaans and Xhosa," said Bru'Me. "What about homework time?" asked Muckle? "Oh yes, homework time too," agreed Bru'Me.

"Right then, step number 3 is to take action. When the time has come to pay attention, I focus all my senses in that direction! During these lessons and activities, switch your brain to concentration mode and focus all your senses on what is most important – which is what your teacher is saying and doing. Be warned, concentration mode requires a good dose of determination and discipline!" smiled Muckle. "For the rest of the day you can leave your brain in imagination mode, and enjoy the wonder of free thought and wide open spaces."

"That doesn't sound too difficult," said Bru'Me, as his tummy gave a loud grumble.

"It is also a good idea to take care of the basics before switching your brain to concentration mode. So, go to the loo, have something to eat and drink, and get a plaster if you need one too," laughed Muckle.



## Chapter 4:

# Amy and the emotional brain

Bru'Me was totally amped for Maths. He was determined to switch his brain to concentration mode and get the information he needed past General RAS to his thinking brain.

He quickly checked on his senses.

- His eyes were on only Mrs. Haggle.
- His ears were listening to only Mrs. Haggle.
- His hands were on his pencil and maths book only.
- Nothing was in his mouth.
- His nose was ignoring all smells.

“I’m not hungry, I’m not thirsty, and I don’t need the loo. I am all set to LEARN!” he said excitedly.

Mrs. Haggle began to teach. “Today, we’re moving on to the four times table.”

Bru'Me felt a small pang of nerves. He was still unsure of the three times table and they were already moving onto the four times table. He pushed the feeling to the back of his mind and re-focused his attention on Mrs. Haggle.



" $1 \times 4 = 4$ .  $2 \times 4 = 8$ .  $3 \times 4 = 12$ ," she said, writing the sums on the board.

With every number that Bru'Me saw, heard and wrote, the panic and fear grew inside of him. His heart began beating faster and his hands began to sweat. He felt butterflies trying to escape from his tummy. What if switching my brain to concentration mode doesn't make a difference, he thought with a sense of dread.

Suddenly, a familiar itch developed in the space between his eyes. Bru'Me lifted his hand and pressed down hard on the little marble. He closed his eyes.

The first thing he noticed when he opened them again was a kind-looking lady sitting at the desk in the middle of the pink, spongy room. Bru'Me scanned the room and saw that General RAS had opened the 'Instinctual Brain' gate and was calmly directing little neurons towards the 'Emotional Brain' desk. Bru'Me immediately recognised the information on the neurons as what his ears, eyes and hands were busy absorbing in maths. " $1 \times 4 = 4$ .  $2 \times 4 = 8$ .  $3 \times 4 = 12$ ."

General RAS winked at Bru'Me and flashed him a thumbs up. "Excellent work Bru'Me. A little bit of focus gets you a long way."

Bru'Me smiled back at him and then shifted his attention back to the emotional brain where the lady was very calmly picking up one neuron at a time.

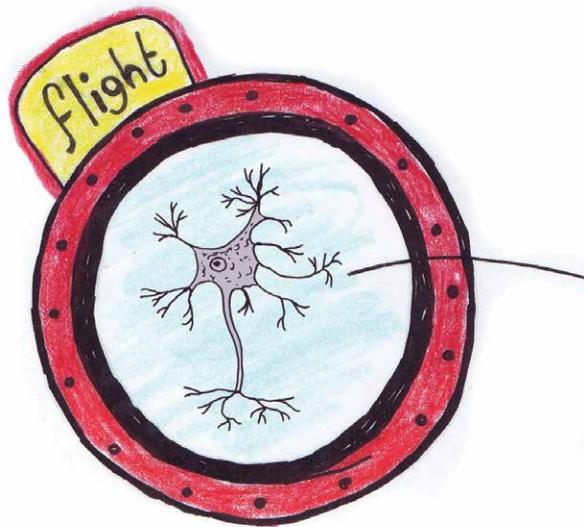
"Mmmmmm" she murmured, holding the ' $1 \times 4 = 4$ ' neuron in her hand. "How do you feel, my dear? I am terribly interested to know how you feel?" She held the little neuron up to her ear and listened closely. "Panic? Oooohhhhh, that's not good." She put the neuron down, picked up the next one and repeated the exercise. "Fear!" she exclaimed. "We can't have that. No, no, no. Let me try one more." Again she picked up a neuron and asked, "How do you feel, my dear?"

I am terribly interested to know how you feel?" Bru'Me noticed that she was no longer looking so calm, in fact she was breathing very quickly and had a wild look in her eye. "Worried?" she cried. "Panic, fear, worry. I can't cope with all this negativity," she wailed, holding her hand to her forehead in a dramatic gesture.

Gathering up the neurons she shouted, "Emotional overload, going into survival mode," and marched towards the instinctual brain. She passed the neurons to General RAS. He looked at Bru'Me apologetically and walked towards the window labelled... 'Flight'.

"Not again," Bru'Me moaned as General RAS pushed the neurons through the window.

Everything went very quiet. Mickle and Muckle sighed. "Looks like you're day-dreaming again. Perhaps you should ask Amy what just happened," said Muckle pointing to where the lady was sitting with her eyes closed, breathing slowly and deeply. She stayed that way for a few minutes until a faint smile began teasing the corners of her mouth.



Bru'Me cleared his throat, "Ahummm, Amy?"

She opened her eyes and smiled. "My full name is Amygdala (A-mig-dala), but that is a bit of a mouthful so please, call me Amy."

"Okay Amy, thank you," said Bru'Me trying to be polite. "Could you explain why you sent all those neurons back to my instinctual brain?"

Amy pointed to the sign on her desk, "I work in your emotional brain and I am most concerned with how you feel about the information General RAS passes on to me. If you are calm, content and interested then I send it to your thinking brain." She waved to the door behind her. "But I do not cope well with negative emotions. When you send me information laden with feelings of worry, boredom, fear, sadness, anger or panic, I get emotional overload, become overwhelmed and can't think straight. So I pass the problematic information back to your instinctual brain. Which is what I did just now, because you were clearly getting very distressed in your maths class."

"But I didn't want to day-dream again. I WANTED that information to get to my thinking brain. I WANT to learn my times tables," said Bru'Me obviously frustrated.

"That's up to you, Bru'Me, not me. Getting information past me is not as hard as you think. In fact you learnt how to do it in Grade 1!"

"WHAT?" exclaimed Bru'Me, "Grade 1? What did I learn about my feelings in Grade 1?"

It all started coming back to him and Bru'Me blurted out, "It's okay to feel mad or sad or happy as can be because all my feelings are a part of me."

"Excellent Bru'Me!" Amy clapped her hands excitedly. That's the first step. Listen to how you feel. If it's a horrible feeling, go on to step number two ... bubble breathe."

"I know how to do that too!" laughed Bru'Me, pausing to take a few deep breaths.

"Bubble breathing is a wonderful way to slow things down so we can think before we act," continued Amy. "It gives us time to think and choose to do something helpful like asking for help, taking time to have fun with your friends at break time, using your imagination to go to a 'happy place', or, my personal favourite, change your bad or sad thoughts to glad thoughts."

Bru'Me was thoughtful for a moment. "I have negative thoughts about maths all the time," he said quietly. "I think it's hard and I won't be able to do it and then I will fail."

"Thank you for being so honest Bru'Me, that is very brave," said Amy gently. "What if that really did happen?" she asked thoughtfully. "What if you really did fail your maths test?"

Bru'Me didn't know what to say. He had never actually thought about it. "Well, I suppose my teacher and my parents would want to know if I tried my best. Uuuuummmmm. And if I had tried my best I guess they would realise that I find maths hard and I need help."

"Do you think that would feel bad?" asked Amy kindly.

Bru'Me's brow crinkled as he pondered his answer. "No," he said with certainty. "It would actually make me feel a bit better."

Amy smiled. "Can I suggest then that you change your thoughts about maths to something more positive, along the lines of, 'I will try my best and I can ask for help if I need it,'" she encouraged.

Bru'Me looked at her astonished. "Of course I can say that. Both of those thoughts are true ... and so much more positive."

Bru'Me smiled. He felt so much calmer. "I actually can't wait to learn my times tables," he smiled.

Amy picked up a little neuron that General RAS had just placed on her desk. "I think this little guy might be the one to get you into your thinking brain!" She held the neuron in her hands. It carried the information '5x4=20'. "How do you feel, my dear? I am terribly interested to know how you feel?" She held the neuron to her ear and listened closely.

"I feel calm, content and interested," whispered the little neuron. Then, smiling broadly, Amy picked it up and opened the door to Bru'Me's thinking brain.

## Chapter 5:

# Neuroplasticity and the thinking brain

Even Bru'Me's brilliant imagination could not have prepared him for what he was about to see and experience.

The room of his thinking brain was filled with a highly complex network of roads and highways that were made up of millions of little neurons all holding onto each other's octopus-like, wispy arms.

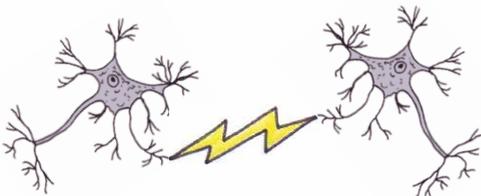
What is this? wondered Bru'Me.

The spaces between the roads and highways were filled with little neurons, each carrying new and different pieces of information. Bru'Me saw the '4x5=20' neuron that Amy had just let in. It appeared to be eagerly stretching its arms out towards the other neurons who were also stretching their arms out in a desperate search.

"Why are they doing that with their arms?" whispered Bru'Me to Muckle.

"They are trying to share their information with each other," said Muckle.

Bru'Me saw a flash of light as two neurons snapped together. "What was that flash?" he asked.



"An electrical bridge," said Muckle.

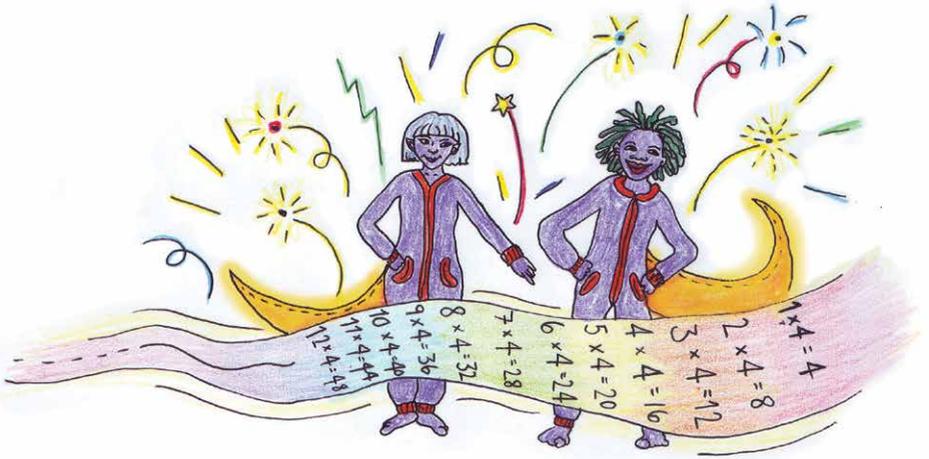
"The neurons built an electrical bridge between them so they can share their information."

"Wow," breathed Bru'Me.

Neurons were snapping together every second releasing flashes of light. It looked like fireworks. Snap, flash, snap, flash, snap, flash. As the neurons connected and shared more and more information they created a chain.

“It’s a road!” shouted Bru’Me. “They’re making a new road!”

“An information pathway,” corrected Mickle. “Not just any information pathway either. That is the information pathway of the four times table you are busy learning in maths!”



“No!” gasped Bru’Me in disbelief.

Muckle laughed, “Oh yes, and look what happens if you keep using and practising the information. Say the four times table, Bru’Me.”

“ $1 \times 4 = 4$ ,” began Bru’Me, hesitating a little. He took a deep breath. Just try your best he reminded himself. “ $2 \times 4 = 8$ ;  $3 \times 4 = 12$ .” He paused and took another deep breath. You can ask for help if you need it, he thought.  $4 \times 4 = 16$ ;  $4 \times 5 = 20$ . As he recited the information, the pathway began to light up and widen.

“Now repeat it again. It should be easier this time,” encouraged Mickle. “ $1 \times 4 = 4$ ;  $2 \times 4 = 8$ ;  $3 \times 4 = 12$ ;  $4 \times 4 = 16$ ;  $5 \times 4 = 20$ ;  $6 \times 4 = 24$ ... Bru’Me could not believe how easily he was remembering his four times table. The more he repeated it, the brighter and wider the information pathway became.

“Now for the magical bit, Bru’Me! Imagine you are sitting at your desk writing a test on the four times table. Imagine what the sums might be, and then imagine yourself writing in the answers,” instructed Mickle.

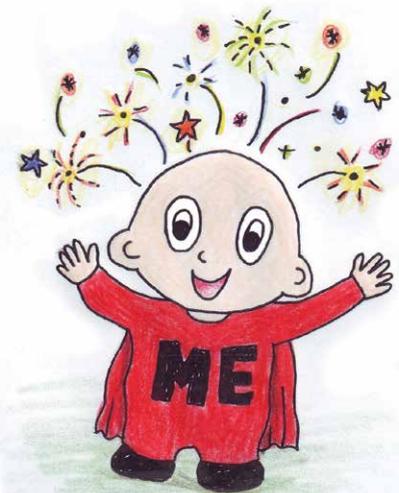
Bru’Me obeyed the instructions. Utterly astonished, Bru’Me watched how, just by using his imagination, the information pathway once again become brighter and wider!

Bru’Me cried, “It’s a highway, I’m creating an information highway!” “You are indeed,” said Muckle proudly.

“So this is what learning looks and feels like,” laughed Bru’Me. “Neuroplasticity, to be precise!” corrected Mickle. “And as long as you get new information passed from General RAS and Amy to your thinking brain, and then use it, practise it or even just imagine it, you can build as many information highways as you like. That is how your brain grows and becomes cleverer and cleverer.”

Bru’Me felt so happy and proud. “Thank you Mickle and Muckle. I will never again think I am stupid or be scared of learning because now I know how to use my brain.”

Bru’Me paused and a mischievous grin spread across his face. He stood up tall, clicked his heels and saluted his little alien friends. “Thanks to General RAS I know that there is a time to imagine and let my thoughts run free, and a time to concentrate on what’s in front of me. Thanks to Amy I understand that I learn best when I am calm, content and interested! But the most exciting thing of all was seeing my brain become cleverer with my very own eyes! Now I know for certain that ...



“I can discover and learn things anew, thanks to my brain and what it can do!”

## Glossary

1. Instinctual brain or reticular activating system - RAS activates my 'flight' or 'fight' instinct...so that I ACT if there is a threat.
2. Emotional brain or limbic system - it checks information to see how I FEEL about it.
3. Thinking brain or frontal lobe - it allows me to THINK, learn, solve problems and be creative.
4. Extraordinary – something really unusual or surprising, or remarkable.
5. Neuroplasticity – the more I use the information in my thinking brain, repeat it or practise it, the better I remember it. This is called neuroplasticity and it is why my brain is always changing and becoming cleverer as I learn and remember new things.
6. Intrigued – when something is really fascinating.
7. Different 'smarts' – different types of clever.
8. Decoratively embroidered – lovely patterns of stitches that are sewn by hand or machine.
9. Porthole – usually a round window or opening found on a ship or wall.
10. Overload – simply too much information that is too heavy to work through.
11. Burly – strong, big and heavy build.
12. Neurons - are the cells that our nerves are made of.
13. Overwhelmed – to overpower someone's emotions or thoughts.
14. 14. Apologetic – showing that you are very sorry about a mistake or for being unkind.
15. Problematic – uncertain about something or causing problems.
16. Highly complex network – very difficult and tricky system that has a lot of criss-crossing lines.

# Family chats

## Family chat 1:

Read through the parent information at the start of this book and then read chapters 1, 2 and 3 of 'My brilliant brain' with your child.

Mickle said something interesting in the story. She said that humans have three brains inside their one brain and that is why we can act, feel and think. Explain to your child what Mickle meant. We do not actually have three separate brains inside our head, but rather three areas in our brain that work very differently to each other.

Bru'Me didn't agree with Mickle when she said he had a powerful and extraordinary brain. Bru'Me thought that he wasn't clever. Muckle told Bru'Me that he was wrong, because all human brains have neuroplasticity. That means they can change and become cleverer, we just have to learn how to use our brains properly.

Ask your child if they have ever felt like that, not clever?

Like Bru'Me, your child may not know or may have forgotten that people are clever (smart) in different ways. Reind your child of the different ways in which people can be smart.

- Word smart - writes stories and poetry
- Logic smart - sit for hours working out riddles, solving problems and conducting experiments
- Body smart - good at sports, drama and martial arts
- Self smart - Have good self-awareness, and are self-motivating and responsible
- People smart - understand people and can work in groups well
- Picture smart - Love to draw, create presentations, posters or movies
- Music smart - love to play an instrument, sing, write songs
- Nature smart - people who seek to understand nature and animals
- Wondering smart - people who think about and seek to understand the mysteries of life

Ask them how they think they are smart, and then ask them which of the smarts they find difficult. Share with your child how you are smart and where you have had to improve over the course of your life!

## Family chat 2:

Chat with your child about their instinctual brain. There is an organ called the Reticular Activating System (like General RAS in the story) that controls your child's fight and flight instinct. Explain how our fight and flight instinct protects us from any threats in our environment by causing us to either run away from it or fight against it. Discuss these ways in which we can fight or take flight.

**Fight** - physically fighting by hitting or boxing, yelling, pushing, arguing and refusing to do something.

**Flight** - getting hysterical and over anxious, running away, ignoring, daydreaming, giving up, quitting or sulking.

If we want to understand how to use our brains optimally and get important information to our thinking brains, we need to understand our fight and flight instinct.

Suggested family game: "Would you fight or would you take flight?" on page 28.

## Family chat 3:

Ask your child if they ever feel overwhelmed because there is too much to do and too much to think about - information overload. When does this happen to them? What do they do when they feel this way? Many children start to daydream, ignore what is happening around them or become angry or anxious and resist what is going on.

That is why in the story General RAS taught Bru'Me three important steps that would help him avoid information overload and get important information to his thinking brain. Recap General RAS's three steps with your child.

1. There is a time to imagine and let my thoughts run free and a time to concentrate on what is in front of me.
2. I must decide on which of my activities need me to focus and when can I play the hocus pocus.
3. When the time has come to pay attention, I focus all my senses in that direction!

Go through your child's 'typical' day at school and at home together and help them understand when they need to concentrate and pay attention, and when they can they relax and play. Identify the most important parts of their day to pay attention (perhaps maths and English) and go over the

following steps to help them concentrate during these important times with their whole body.

Eyes: Look at the person who is talking.

Ears: Hear what is being said.

Mouth: Remains quiet.

Hands: Keep them still and place them in your lap.

Feet: Place them on the floor and keep them still.

Body: Faces the person who is talking.

Brain: Is interested and thinks about what the person is saying.

Heart: Cares about what the speaker is saying.

Read through the parent tips on page 3, so that you and your child can both do what you can to help your child avoid or manage information overload.

Suggested family games: 'Bru'Me says' on page 28.

### **Family chat 4:**

Read chapter 4 of 'My brilliant brain' with your child. Chat with them about their emotional brain and how the amygdala (Amy in the story) checks all the information coming into the brain to see how you feel about it. If you are calm and content the information goes to your thinking brain and learning becomes easy, but if you are stressed, worried, frustrated or bored (emotional overload), your fight and flight instincts are activated and learning becomes difficult.

Ask your child if they ever feel overwhelmed with negative thoughts or emotions. Share your observations of when you think they experience feelings of fear or anxiety and situations when you experience feelings of fear or anxiety. Chat through Amy's suggestions on how to manage emotional overload: bubble breathe (slow conscious breathing), slow down and think of what would be helpful in the situation. What are helpful things to do?

- Ask someone you trust for help.
- Do something you enjoy.
- Play with your friends.
- Talk to someone about how you feel.
- Ask for a hug.
- Run around the garden and get some exercise.
- Imagine your happy place.
- Change sad or bad thoughts to glad thoughts.

Explain to your child that there are often two ways to look at a situation. One way may make us feel sad or bad, but the other way may make us feel glad or a bit better. Learning to look on the bright side of tricky or uncomfortable situations helps us to create a positive attitude to life... and learning.

Part of looking on the bright side is being honest about sad or bad thoughts.

Once a sad or bad thought has been identified, a useful step in bringing about the attitude change and 'looking on the bright side' is to go through the process of asking 'what if' questions. 'What if' questions help us look at a situation from different perspectives. They often reveal a brighter side and help us change our sad or bad thoughts to glad thoughts!

For example:

Sad or bad thought: "I am going to fail my test."

'What if' question: "What will happen if you do fail your test?"

Child thinks: "My teacher will know that I don't understand the work."

"I will know that I need to ask for help."

"I will know that I need to put in more effort."

Glad thought: "I can ask for help if I do not understand the work."

Brainstorm a code word with your child, that you can use when they are experiencing emotional overload. The sillier, the better - humour is a great way of re-directing emotions. Agree with your child that when you say this word, it will remind them to breathe, slow down and think before they act, so that they can choose to do something helpful and look on the bright side. They can use the code word on you too!

Suggested family game: 'The glad game', on page 29.

### **Family chat 5:**

Read chapter 5 of 'My brilliant brain' with your child. Finally Bru'Me got to his thinking brain and saw it getting cleverer through neuroplasticity which means that our brains can always change and learn new things if we use them properly.

Ask your child how we turn an information pathway into a highway? Chat through the following four ways in which you can turn information pathways into highways and possible ways of including them into your homework routine.

- Learn it - Get the information to your thinking brain through whole body listening and managing your emotions so that you feel calm, content and interested.
- Use it - Do workbook activities, play educational games, have family quizzes.
- Practise it - Do your homework, learn for tests, practise your instrument etc.
- Imagine it - visualisations, make up riddles or songs.

## Family chat 6:

Chat with your child about these important ways in which we should look after our brains.

- Always wear your seatbelt. This helps to protect your head and brain if you are in an accident.
- Exercise your brain by learning new things, repeating them and using them. Play memory games to exercise your brain. The more we use our brains, the better they work.
- Get a good night's sleep. Your brain repairs itself while you sleep and consolidates all that you have learnt during that day.
- Get regular exercise (run around in the garden), which ensures that your brain gets a steady supply of oxygen. Breathe deeply.
- Always wear your helmet when you are skateboarding, riding a bike or on a scooter, rock climbing, horse riding or playing a sport like baseball etc. This protects your brain if you fall.
- Just like your body, your brain needs energy to work its best. Start the day with a good, healthy breakfast.
- Drink lots of water. Your brain is 80% water and if it gets dehydrated it does not work as well.
- Limit your screen time - television, iPad, cell phones etc. Too much screen time can affect your concentration. General RAS will not be happy!
- Always look both ways when you are crossing the road. If you get hit by a car, your brain may become damaged/injured.
- Be careful when diving. There is a good reason why adults are always saying be careful where you dive, only in the deep end, not near rocks in a river or dam etc. You do not want to hit your head when you dive. You will hurt your brain.
- Like the rest of the cells in your body, your brain cells also need nutrients to function well. Eat a balanced diet throughout the day with lots of fish, fruit and vegetables.

Try this experiment with your child:

Place an egg inside a Styrofoam cup. Imagine that the egg is your head, and the cup is a helmet. Test your 'helmet' by dropping the cup. Did the egg stay intact? In a bike or skateboarding accident, a helmet protects your brain in the same way.

Suggested family game: 'Brain food cook up' on page 29.

## Family games

### Would you fight or take flight?

Read out the scenarios below and ask each member of the family how they think they would react in each situation. What would they do: fight or run away? How would they fight or take flight. Add your own scenarios to the list below. If you have experienced or are experiencing some of these situations, this game will provide a valuable opportunity to talk through your reactions and feelings.

- You are being bullied.
- Someone is trying to steal your cell phone.
- You are watching a really scary part of a movie.
- You are worried about something you have forgotten to bring to or do at school.
- You are worried about failing the year and having to repeat it.
- Your parents are getting divorced or having a really bad fight.
- Something gets really hard to get right, like a painting or new music piece.
- You are having a disagreement with a parent, sibling or friend.

### Fun version of 'Bru'Me says'

Play this game with your child so that they can practise whole body listening. Whole body listening helps us get important information past General RAS and avoid information overload. When you call out these instructions, your child must respond with the appropriate action and explain to you how they are listening with that part of their body.

Bru'Me says, "Listen with your eyes." - Children make binoculars out of their hands, hold them up to their eyes and look at you.

Bru'Me says, "Listen with your ears." - Children cup their hands behind their ears.

Bru'Me says, "Listen with your mouth." - Children lift their fingers to their lips as if to say, "sssshhhh".

Bru'Me says, "Listen with your body." - Children shift their bodies to face you directly.

Bru'Me says, "Listen with your hands." - Children lift both hands in the air, fingers spread and facing you, and then place them in their laps.

Bru'Me says, "Listen with your feet." - Children place their feet as quietly as they can, side by side on the floor.

Bru'Me says, "Listen with your brain." - Children shout "I'm ready to learn."

Bru'Me says, "Listen with your heart." - Children shout "I want to learn."

## **The glad game**

Play the glad game with your family so everyone can practise looking on the bright side of life!

How to play the game:

Everyone must write down a few bad or sad thoughts they have from time to time on a small piece of paper. For example:

- We never have any nice food in the house.
- We never get to go anywhere exciting.
- It's not fair that I don't have a ...
- I hate school.
- I am not as clever as ...
- I am so tired of working.
- I have to do everything around here.
- I wish I had a bigger room.

Fold up the pieces of paper and put them in a hat. One at a time, each player takes out a piece of paper and reads the bad or sad thought. The rest of the family pose any 'what if' questions that come to mind, that the player must answer. The player then tries to change the sad or bad thought to a glad thought. If they are able to come up with a realistic glad thought they get a point. One member of the family can keep score.

## **Brain food, cook up**

Some foods are better for our brains than others. This is a list of great brain foods: eggs, Greek yoghurt, greens, cauliflower (purple if you can find it!), fish, clean meat (free of preservatives), nuts and seeds, oatmeal, apples and plums. Do a little research with your child, and add to this list.

Together with your child, plan a menu for one day this week that includes as many brain foods from your list as possible. Make an effort to make these brilliant brain foods your 'everyday foods'.

## **About the authors:**

**Linda Joyce Bruce** is a mother of three and an Economics and Industrial Psychology major from Stellenbosch University. In 2008 Linda published her first book, 'Motherhood and Me', through Oshun, an imprint of Random House Struik. She then founded COOL TO BE ME in 2009, where she dedicates her time, energy and knowledge to the development of social-emotional learning as an educational concept that can be taught to and learned by children in the Foundation and Intermediate Phases of education.

**Lisa Cohen** is a Storyteller and Speech and Drama teacher with a post-graduate degree in Psychology. She is an experienced and skilled facilitator and is passionate about working with children. Through 'Grow a Tale' and COOL TO BE ME, she works with individuals and groups using a holistic approach to education, with an emphasis on personal development and creative expression.

## **My brilliant brain**

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# DISCOVERING MY INNER WORLD

## MY MIRACULOUS BODY

Mickle and Muckle, two alien scientists from the Planet Wowzer, use extraordinary methods to teach Bru'Me and his friends about the miraculous nature of their bodies, inside and out.

*My miraculous body and I both agree that WOW is how we choose to be!*

## MY BRILLIANT BRAIN

Bru'Me gets to see inside his brain and watch how it works. He learns that if he can avoid information overload and emotional overload, important information will reach his thinking brain where the magic of neuroplasticity takes place.

*I can discover and learn things anew, thanks to my brain and what it can do.*

## MY WISE HEART

Bru'Me meets an unusual friend. Together they figure out a confusing riddle and Bru'Me learns to ssshhh-aahh-zzzing – to become quiet; to listen and, to follow his wise heart.

*Ssshhh. Take time and listen to what's inside. Your heart will be your friend and guide.*

## MY SPECIAL GIFT

Bru'Me and his friends win the Shelly Beach Sandcastle Competition. Their celebrations are short-lived as they are mysteriously transported back in time to teach the Lord and Lady's triplets to appreciate their differences and the special gifts they each have been given.

*Use the gifts that you have been given, to share and build the world we live in.*



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