



Ideas for exploring



Title: Te Hinengaro Mīharo – The Amazing Brain

Objectives:

- 1) Increase familiarity with *Whakatipu*
- 2) Increase understanding of the role of parents and whānau in supporting early brain development.

Background information: Unlike the brains of other animals, the human brain is unfinished at birth, it requires experiences and input from the world to complete and is fully dependant on adults to survive. A newborn brain, via the senses, is in data gathering mode. In the first three years especially, pēpi is figuring out and adapting to the environment he is growing up in and wiring up a brain that will determine how he will think, feel and act for the rest of his life.

A brain develops **in sequence** from the basic survival functions in the brain stem to the more complex thinking areas in the cerebral cortex. **Different regions have different functions** that all link together in a complex network of connections. The large size and well developed cerebral cortex with its more advanced functions sets us humans apart from other animals.

Key to early brain development is the primary attachment relationship which acts as a 'pattern' for all future relationships and how a pēpi learns to trust, relate and respond to another human. Their feelings about themselves, levels of confidence and sense of security and how well they'll cope with stress, are all directly affected by the messages sent to their brain when parents and whānau **do or do not** respond to their cues. Helping parents figure out or 'attune' to those cues is crucial.

Activity: Brainstorm/Discuss - 📣 Group size will determine activity and process - pairs/trios/groups*

- What is social/emotional development and why is it so important?
- What role did the traditional Māori way of living play in brain development? (whānau/hapū/iwi)

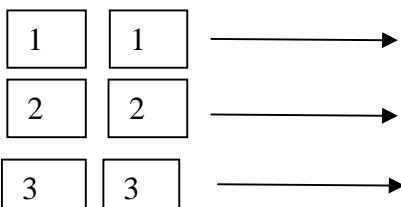
Draw diagram or print off attached handout to show the neuro sequential model and highlight the area most active at birth.

Give each *pair/group 3 pieces of blank A4 paper and 1 x *Whakatipu* booklet

📣 Ask them to go to Te Hinengaro Mīharo, Pēpi Says and Whānau Says sections, and read and collect a couple of bullet points on each paper to answer the following questions:

- 1) What is going on in the brain?
- 2) What will we see pēpi doing?
- 3) What are parents/whānau doing?

Create a timeline from Te Kākano > Te Māhuri showing the developmental progress and whānau input



Summarise by highlighting the importance of understanding the sequence of development. Baby needs to feel **secure and safe** before he can be curious and start exploring. His intellectual development therefore depends on his **emotional health** which is greatly affected by the type of early relationships he experiences with the whānau around him.

Extensions:

- Share *Tikanga Whakatipu Ririki* research 'What the first visitors saw'. Affirms traditional Māori parenting practices in building relational health and wellbeing as recorded by early visitors to Aotearoa. <http://www.ririki.org.nz>
- Watch DVDs or Youtube clips for more information.

Resources used: *Whakatipu* series - Pens/A4 paper

Additional resources and information

DVDs:

"Babies" – (79 mins) Follows the development of four newborns in their first year of life in four different countries and cultures across the world.

"Why the Early Years Count" – Brainwave Trust (18 minutes) – Scientific findings on brain development in the first 3 years

"Brain Development for Babies" Nathan Wallis – An introduction to neuroscience and infant development

"The First Three Years Last Forever" – (15 mins) Brainwave Trust

You Tube clips:

What we learn before we're born – Annie Murphy Paul, TED talk

The linguistic genius of babies – Patricia Kuhl, TED talk

Attunement and Why it Matters – David Arridondo (4.08 mins)

Attachment or Attunement – David Arridondo (1.58mins)

A Hand Model of the Brain – Dr Daniel Siegel (2.31mins)

Relationships and Learning – Dr Bruce Perry, www.youtube.com/watch?v=g3cz-QIPkOo (2.37 mins)

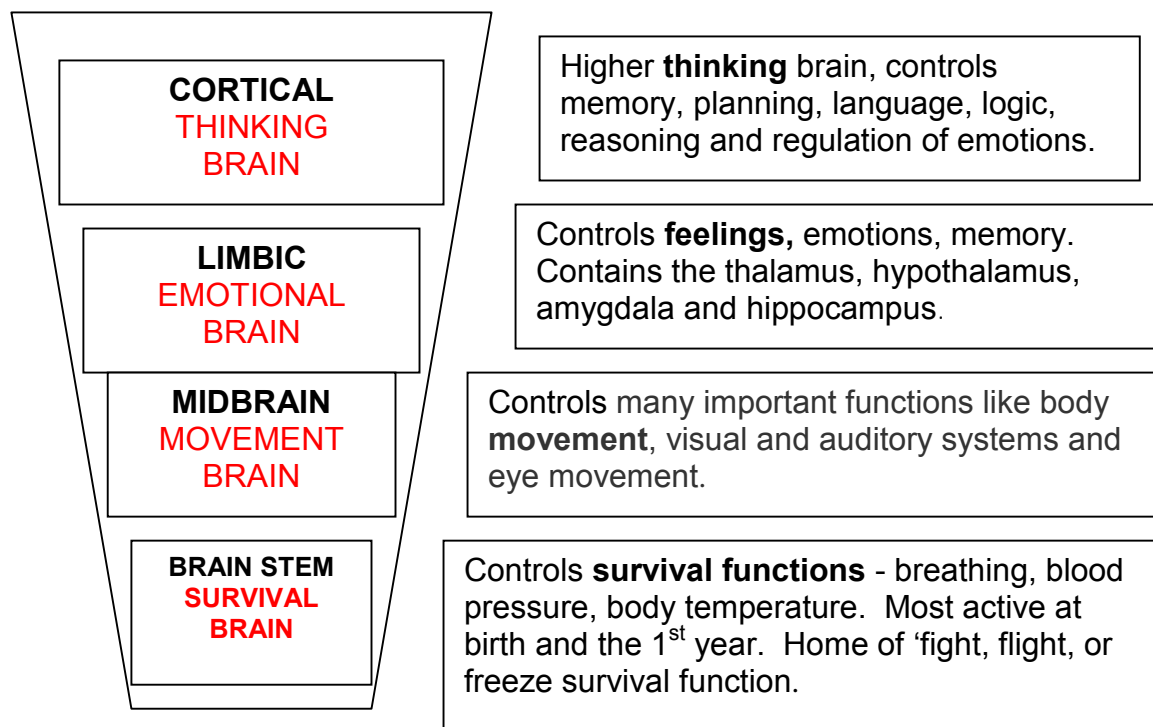
Brain development and self regulation – Dr Bruce Perry, www.youtube.com/watch?v=ZVRO7PdYRnM (4.15 mins)

Dr Regalena Melrose, www.youtube.com/watch?v=o9LHvJwj-PQ (4.41mins)

and www.youtube.com/watch?v=rzm0t6wXW0c (10mins)

Neuro-sequential model of brain development.

(Bruce D. Perry M.D., Ph.D. Senior Fellow of the ChildTrauma Academy)



Some people may value the abilities of the cortex more highly than the brainstem but in fact our brain doesn't, it views 'survival' as more important than 'thinking'. It is the brainstem that is 'in charge' and controls the access to our thinking brain. If the brainstem is aroused by stress or fear it basically 'locks out' the thinking brain while it deals with the survival need first.



The **top floor, Library = Cortical region** – is where we do most of our higher order or more complex conscious thinking. Just like a library the cerebral cortex is divided into different areas. It has two halves known as hemispheres and four distinct areas known as lobes. These are called the frontal, temporal, parietal and occipital lobes, each with specific functions. The large size and well developed cerebral cortex with its more advanced functions set us humans apart from other animals.

The **second floor, Bedroom = Limbic region** – is where many of our emotions are based including fear and anger and also feelings of pleasure too such as those experienced from eating and sex. Two structures of the limbic system, the amygdala and hippocampus are key players also involved in memory.

The **first floor, Gymnasium = Midbrain area** – is where there is a lot of focus on movement. Posture, walking, developing and strengthening our body as it learns to control its range of movements.

The **basement = Brainstem** – is where all the functions of the building are driven from. The electricity that operates heating, cooling, lighting, elevators and the plumbing all has its **control centre** in the basement.

This four story building analogy of the neuro-sequential model of brain development attempts to show that no matter how much information and cognitive ability is stored in the 'top floor library' it becomes inaccessible in times of high stress or anxiety.

It is as if the library is in lock down as the 'more lowly' basement takes control ensuring that the building 'survives' the fight, flight or freeze situation. If babies and young children are consistently fearful, living in frightening and dangerous situations their ability to access the learning and development which takes place in the cerebral cortex is far more limited.