



Understand your Teenage Child's Educational Needs

A biological
perspective on
educating teenagers

Adolescence



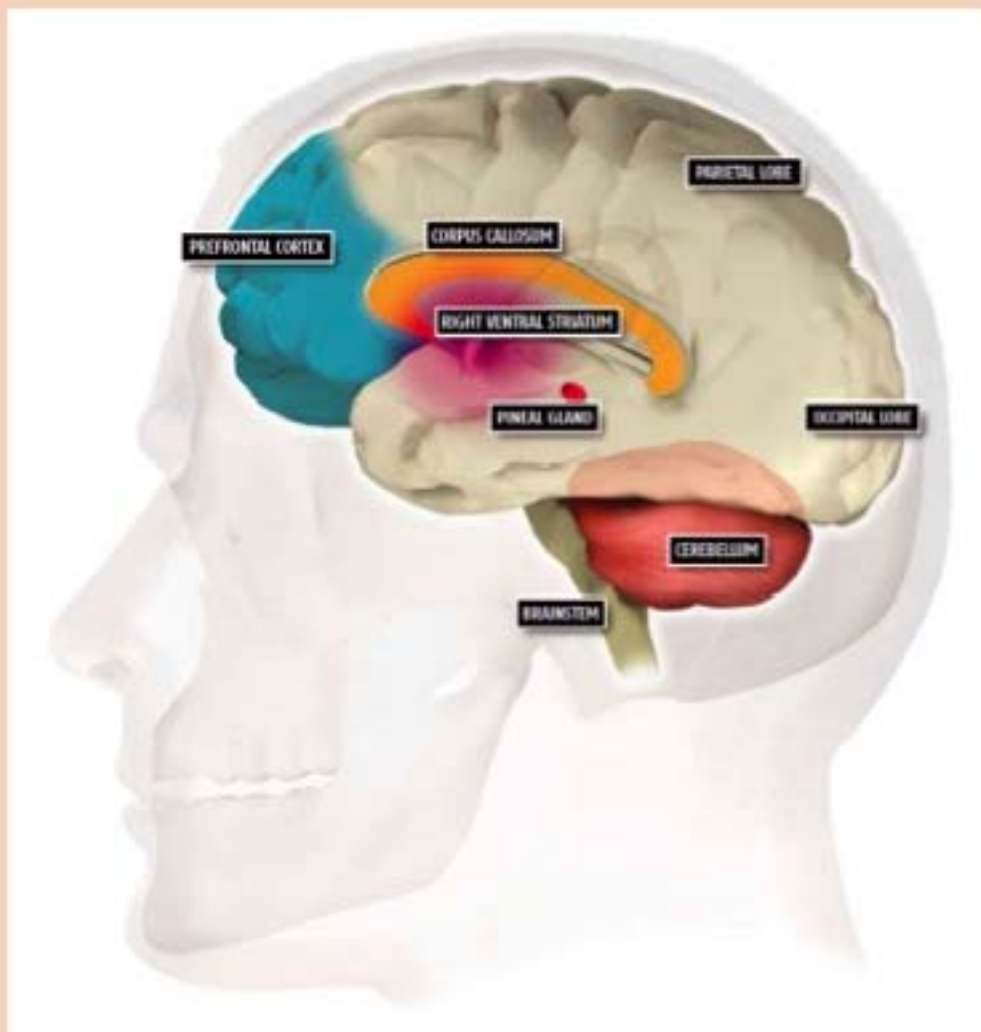
“At your age, Tommy, a boy’s body goes through changes that are not always easy to understand.”

Brain Changes



- Recent discovery of a growth spurt in the brain as puberty starts
- At around 11-12 years, the connections between brain cells in the prefrontal cortex proliferate
- Prefrontal cortex increases in overall size by around 1-2mm

Inside the Brain



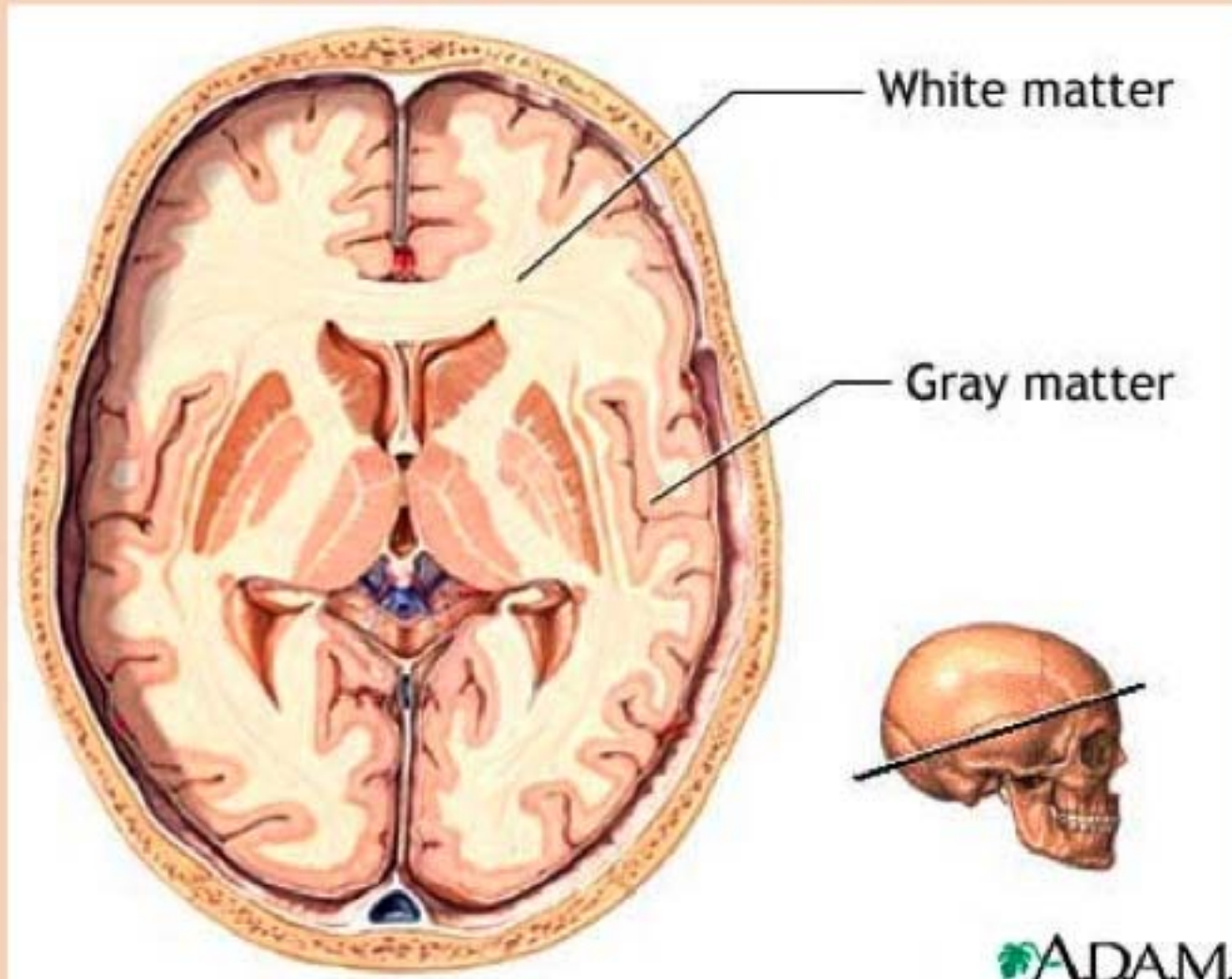
Synaptogenesis



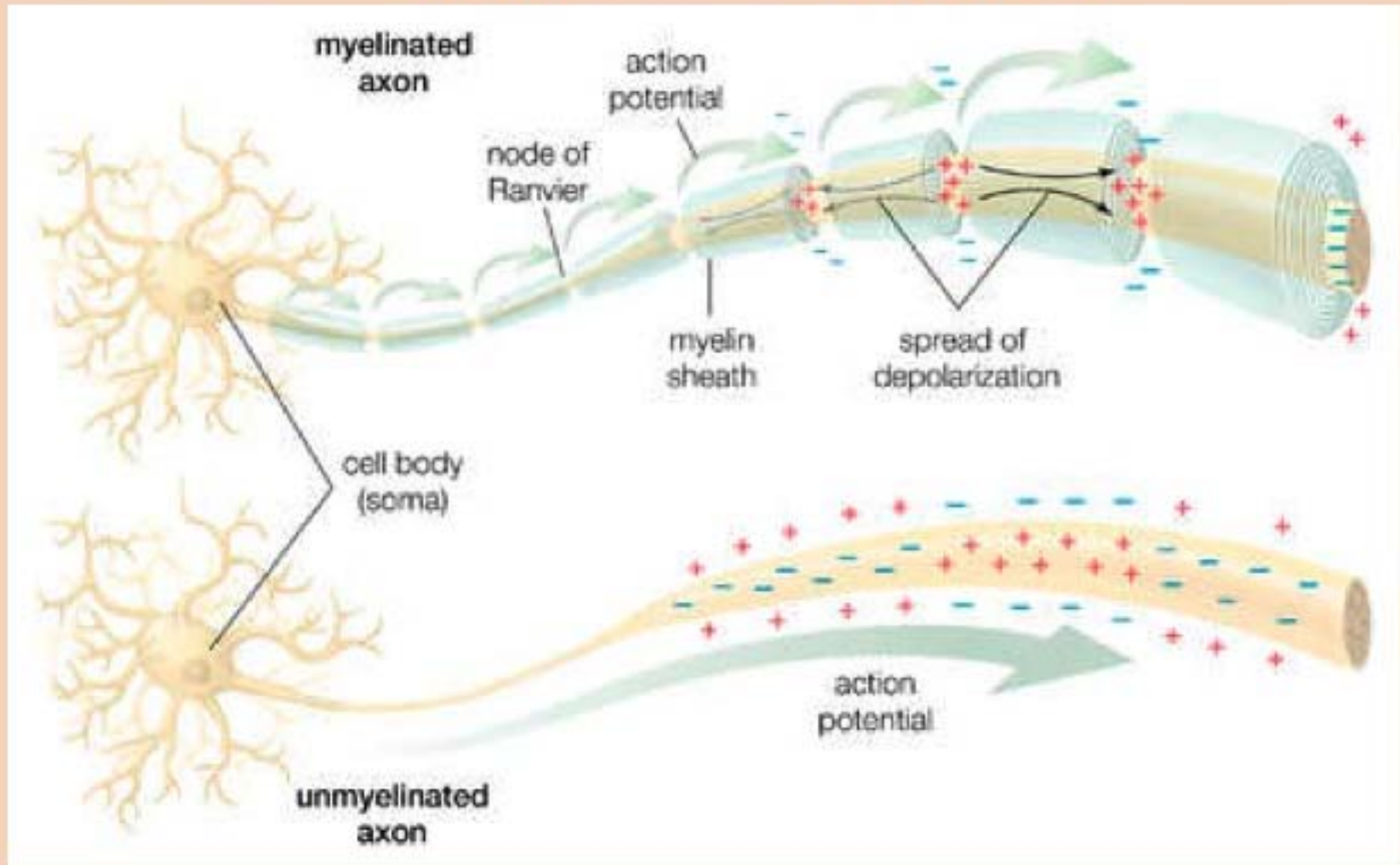
Synaptic Proliferation



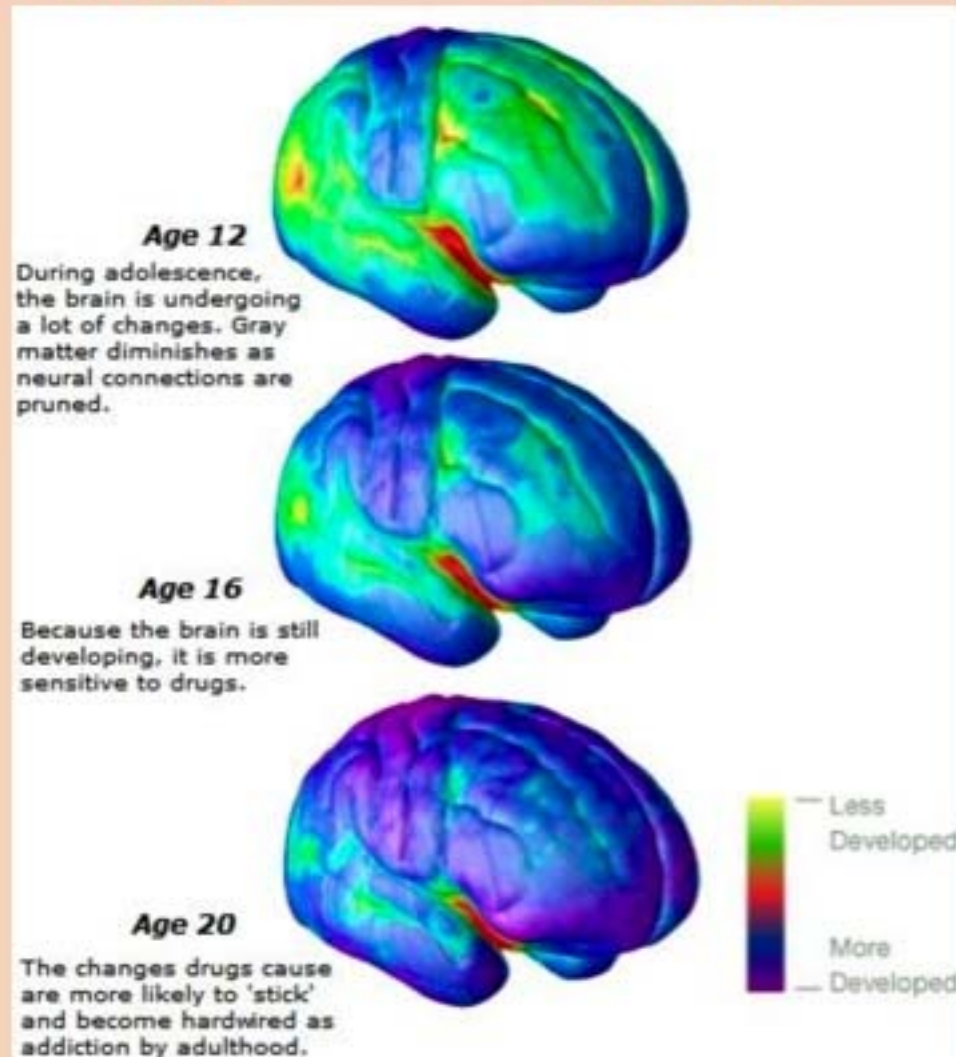
White Matter



Myelination



Development of brain

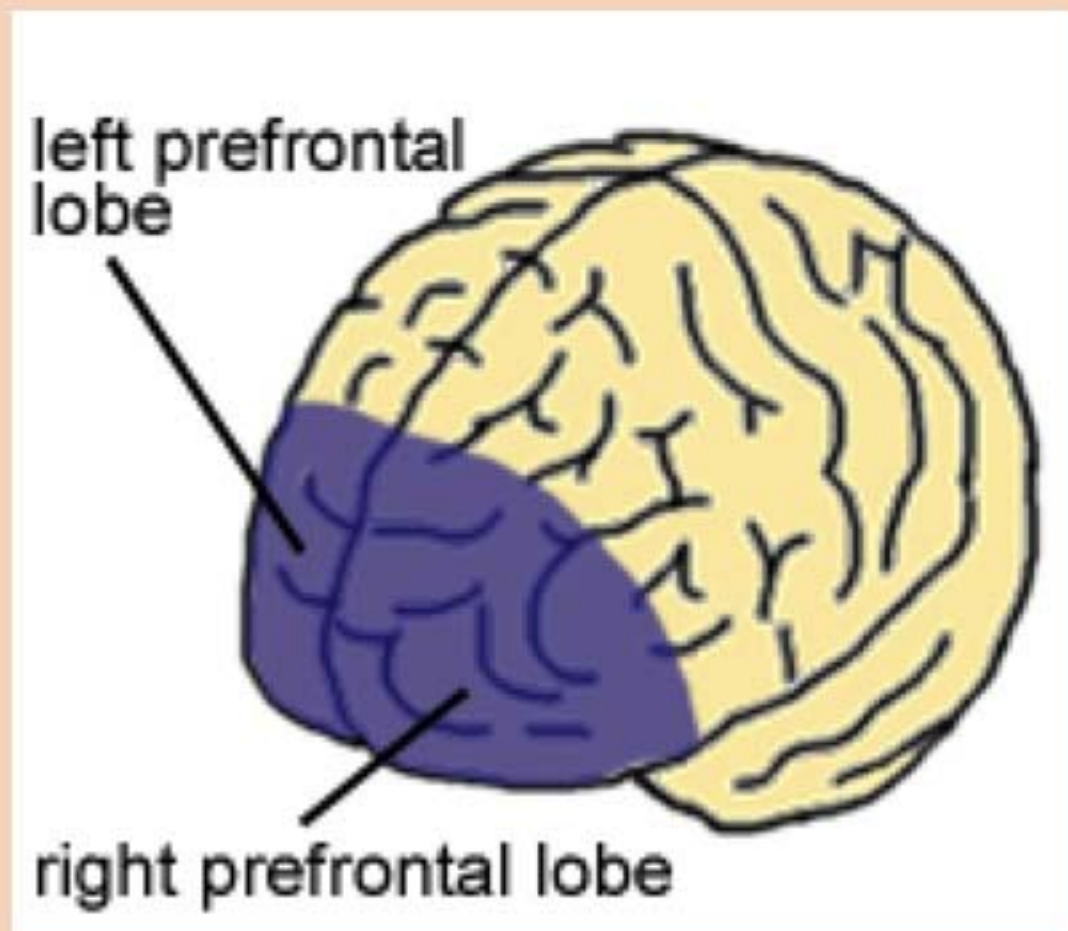


Size of Brain

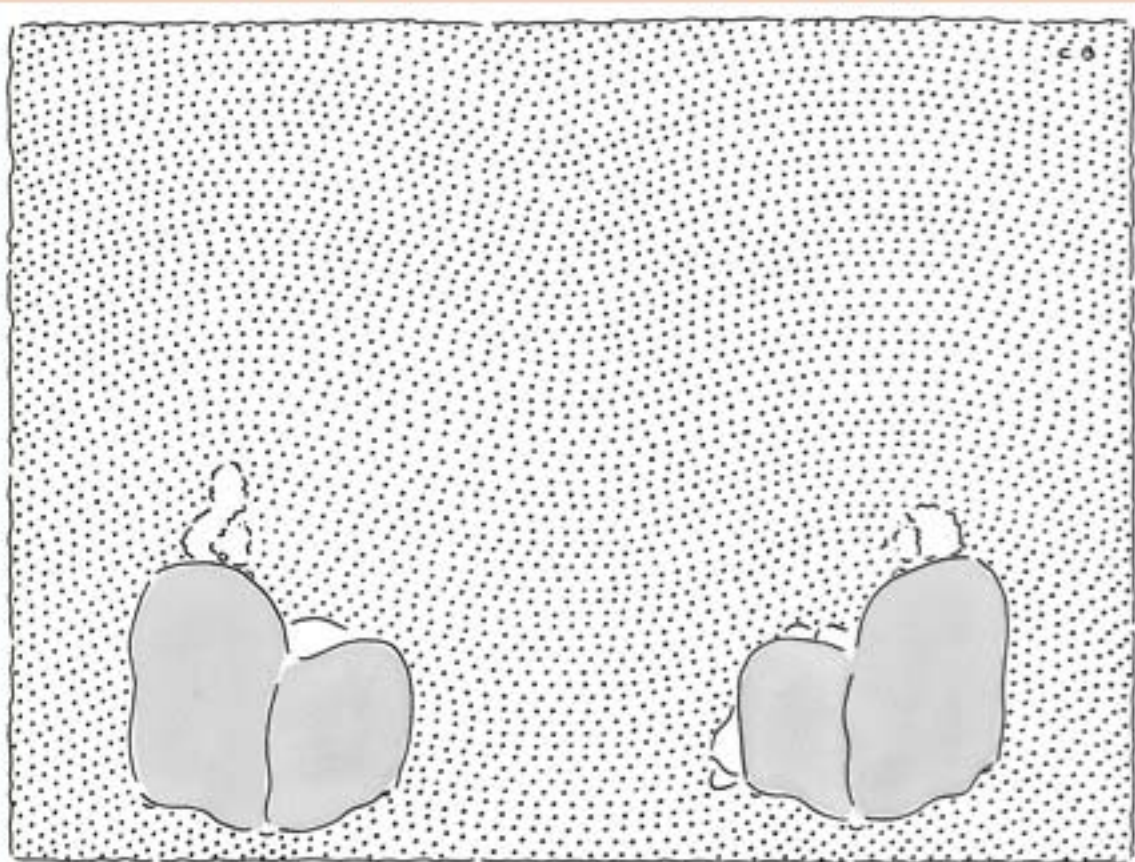
1. Human Brain
2. Monkey Brain
3. Cat Brain
4. Pigeon Brain
5. Opossum Brain
6. Dog Brain



PreFrontal Cortex




Executive Function



"The first thing I do every morning is arrange
all my thoughts in alphabetical order."

Processes of Executive Function

- 
- Reasoning
 - Decision making
 - Managing Conflicting Thoughts
 - Delayed Gratification
 - Voluntary response Inhibition
 - Working memory
 - Prospective memory
 - Selective Attention
 - Planning
 - Predicting Outcome

Think Like a Teenager

- During adolescence the **executive functions** of the prefrontal cortex are **disrupted**
- Planning ahead becomes difficult



Resulting Problems

- disorganization (in time and space)
- poor judgment
- lack of insight and self-control
- problems with long term goals
- short attention span
- weak working memory
- poor impulse control



Use it or lose it

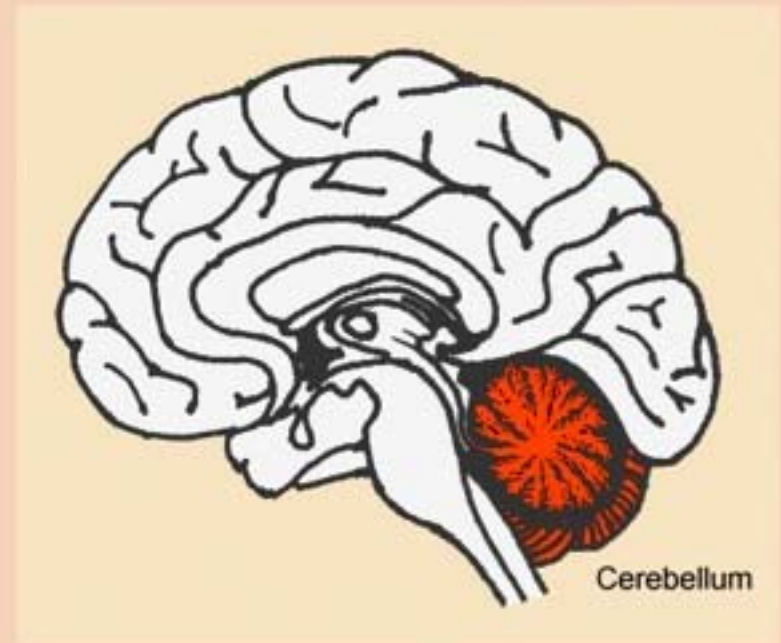


- Synapses that are used frequently are fixed
- Synapses which are not used are gradually lost
- New patterns of learning & behaviour are established



The Cerebellum

- This part of the brain continues to grow until late adolescence.
- It governs posture and movement, helping to maintain balance and ensure that movements are smooth and directed.





Language acquisition



The areas thought to be involved in language learning undergo high growth rates before and during puberty, but this growth then slows.

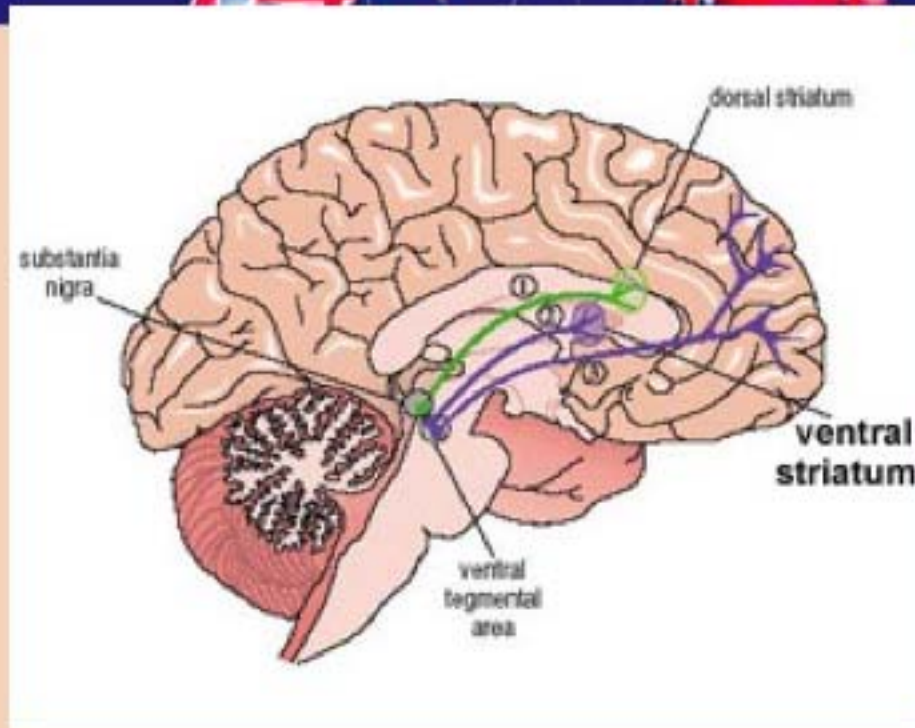
off the mark.com by Mark Parisi

I SELECTED "SPANISH." NOW SEE IF YOU CAN FIGURE OUT HOW TO WITHDRAW YOUR ALLOWANCE...



MOTIVATING YOUR KID TO
LEARN A SECOND LANGUAGE

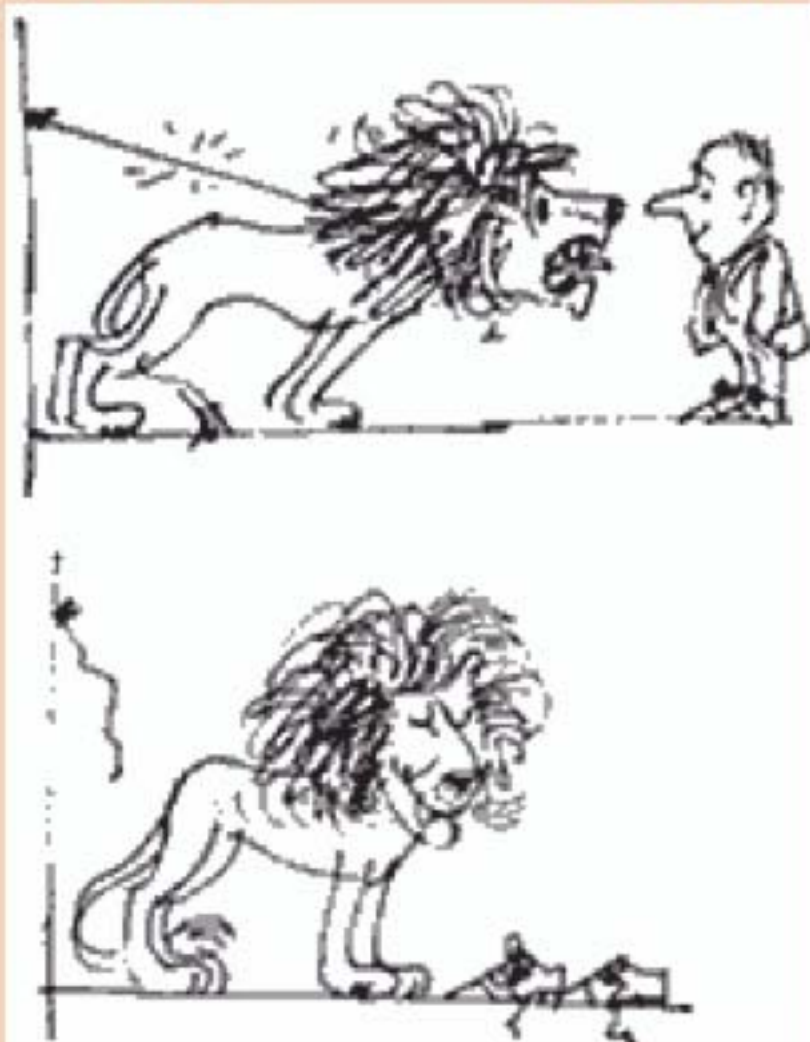
The Right Ventral Striatum



This area of the brain is thought to be involved in motivating reward-seeking behaviour.

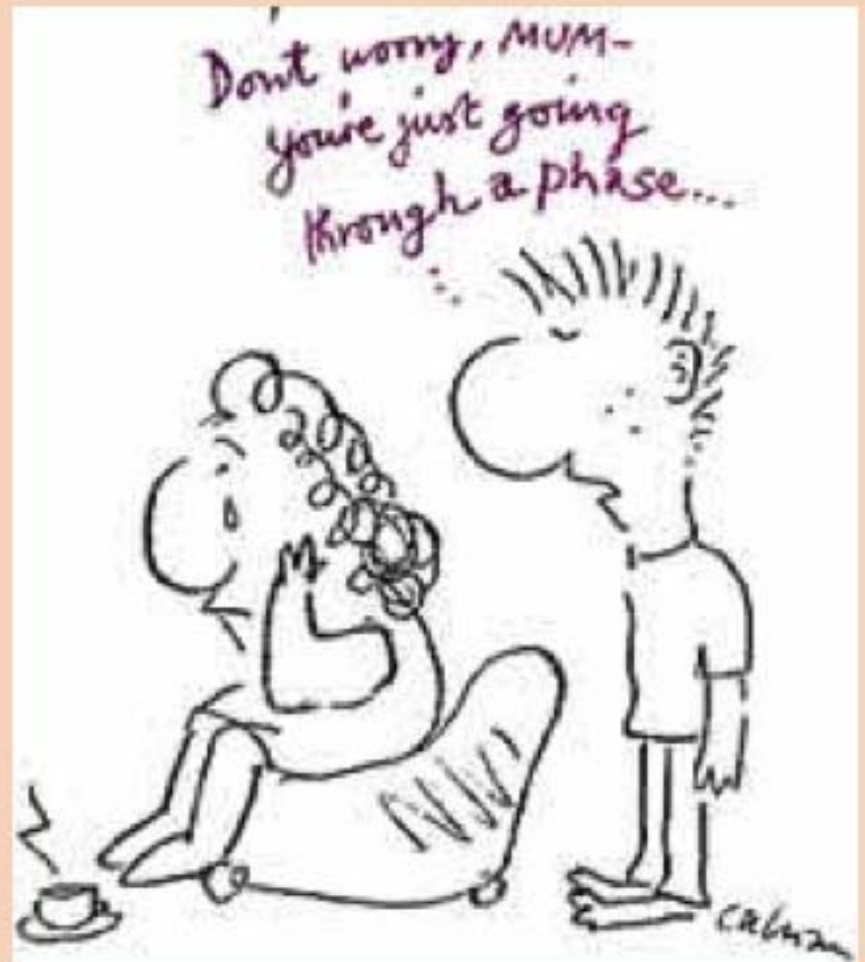


Risk taking



Teenage Behaviours

- acting compulsively
- taking more risks
- disorganisation
- clumsy
- unreasonable behaviour
- feeling that everyone hates them



Implications for Teenagers



- The synaptic connections that are fixed between brain cells in the teenagers prepare them for adult life
- It is very important to ensure that not only are the most appropriate synaptic connections made but also that there are the most appropriate number.
- They need to listen and incorporate advice from the adults who care for them

Implications for Schools

Teenage pupils

- may not always be organised
- may not always remember to bring right equipment to lessons
- may not always plan their work
- may not always prioritise their work
- may not always foresee the consequences of their inaction
- may misinterpret your worry

Implications for Teachers



- Teenagers will need constant reminding to do the basics
- The ground rules have to be repeated regularly
- Gradually synaptic pathways will be incorporated into their brains
- The work done during the teens could last a lifetime!

Learning by instruction



Learning through discussion



Learning through research



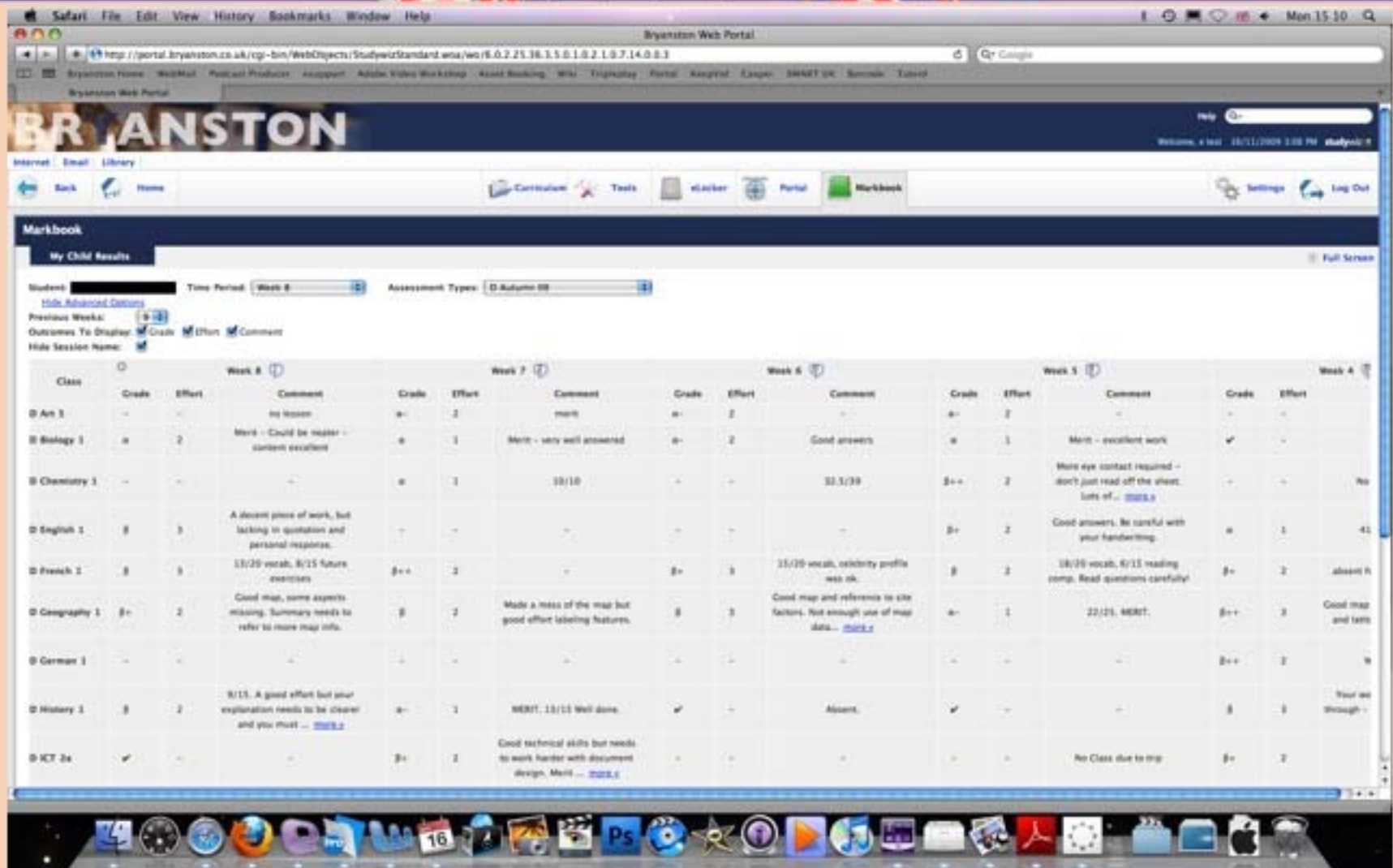
Independent Learning



The Correction Period



A Method for Managing Teenage learning



BRANSTON

Internet | Email | Library

Back Home Curriculum Tools Markbook Portal Markbook Settings Log Out

Markbook

My Child Results Full Screen

Students: [Student Name] Time Period: Week 8 Assessment Types: [Assessment Type]

Hide Advanced Options

Previous Weeks: [Previous Weeks]

Outcomes To Display: Grade Effort Comment

Hide Session Name:

Class	Week 8			Week 7			Week 6			Week 5			Week 4	
	Grade	Effort	Comment	Grade	Effort	Comment	Grade	Effort	Comment	Grade	Effort	Comment	Grade	Effort
Art 1	-	-	No lesson	A-	2	Merit	A-	2	-	A-	2	-	-	-
Biology 1	A	2	Merit - could be better - content excellent	A	1	Merit - very well answered	A-	2	Good answers	A	1	Merit - excellent work	✓	-
Chemistry 1	-	-	-	A	1	10/10	-	-	11.5/10	B++	2	More eye contact required - don't just read off the sheet. lots of... more...	-	No
English 1	B	3	A decent piece of work, but lacking in quotation and personal response.	-	-	-	-	-	-	B+	2	Good answers. Be careful with your handwriting.	A	1
French 1	B	3	11/20 vocab, 8/15 future exercises	B++	2	-	B+	3	15/20 vocab, celebrity profile was ok.	B	2	18/20 vocab, 6/15 reading comp. Read questions carefully!	B+	2
Geography 1	B+	2	Good map, some aspects missing. Summary needs to refer to more map info.	B	2	Made a mess of the map but good effort labelling features.	B	3	Good map and reference to site factors. Not enough use of map data... more...	A-	1	22/25. MERIT.	B++	3
German 1	-	-	-	-	-	-	-	-	-	-	-	-	B++	2
History 1	B	2	8/15. A good effort but your explanation needs to be clearer and you must... more...	A-	1	MERIT. 11/15 Well done.	✓	-	Absent.	✓	-	-	B	3
ICT 2a	✓	-	-	B+	2	Good technical skills but needs to work harder with document design. Merit... more...	-	-	-	-	-	No Class due to trip.	B+	2

The Tutorial



Activities Outside the Classroom



Preparation for University



Lifelong friendships



Bryanston School – 21st Century Education in traditional surroundings

