

Short Course for Secondary School Teachers on Teaching the Key Learning Areas of
Technology Education Arts Education Physical Education in the English Medium

Teachers' Voices: Teaching Technology, Arts & PE through English

What we have learnt and what we have to consider

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Developing a stronger brain

“Language processing involves **complex synergies between multiple brain systems**”

Terrence Deacon, University of California, Berkeley
(Anthropology & Neuroscience) Plenary at International
Systemic Functional Congress 37, University of British
Columbia 2010.

This suggests that students learn more effectively (in other words, the systems of neural networks are stronger) if they are **simultaneously given multiple ways of accessing meanings.**

Multiple ways of making meaning — overview

Major	Minor	Examples
language	<i>drawing</i> <i>real-life</i> <i>colour</i> <i>sound</i> <i>movement</i>	<ul style="list-style-type: none">• spoken and written texts• real objects or photos of real objects• drawings, copies or cross-sections• diagrams, tables, graphs, equations• hand and other body movements• simulations and animated diagrams• videos and time-lapse photographs of real-life and non-real-life events
visuals		

Continuum of meaning potential—education

ACTION

REFLECTION

everyday,
personal,
spoken

Increasing dependence on
language

technical &
abstract,
impersonal,
written

Decreasing dependence on non-
language ways of making meaning

Developing a stronger brain

The 'stronger brain' is the one that has developed through activities that are **patterned, repeated** and done with **moderate stress**.

Bruce Perry & Maia Szalavitz (2006) *The boy who was raised as a dog and other stories from a child psychiatrist's notebook: what traumatized children can teach us about loss, love and healing*. New York: Basic Books

Patterned language,
patterned visuals and
patterned actions

Repeated \neq drilled
Repeated = recycled

Moderate stress 'forces' your body to use energy to fire neurons and so neural networks expand. Staying in your comfort zone causes networks to reduce in size.

Developing a stronger pedagogy

Patterned language, patterned visuals and patterned actions

Make these patterns explicit to the students

Repeated \neq drilled
Repeated = recycled

Recycle meanings through interaction between teachers and students and through eg the visuals and language

Moderate stress 'forces' your body to use energy to fire neurons and so neural networks expand. Staying in your comfort zone causes networks to reduce in size.

Maintain a suitable challenge for the students but provide the support that allows them to meet the challenge.

Learning in another language

“When you learn something, those parts of the brain that are involved get very efficient and fast at doing their job. However, they become so good, they **resist doing the same thing in a different way.**”

Norman Doidge (2007) *The brain that changes itself: stories of personal triumph from the frontiers of brain science*. New York: Penguin Books

Research member at Columbia University (New York), and the University of Toronto

So, if you can already do something in Chinese, it is difficult to get your brain to do the same thing in a different language. What are the implications for:

- using both Chinese and English in the same lesson
- the design of a school's English medium-of-instruction plans?

Systemic patterns in language

What do you have to do?

What do you have to tear?

Steps for

How do you have to tear the paper?

task

1. **Tear** newspaper and rice paper lengthwise in strips.



What do you have to do?

What do you have to write down?

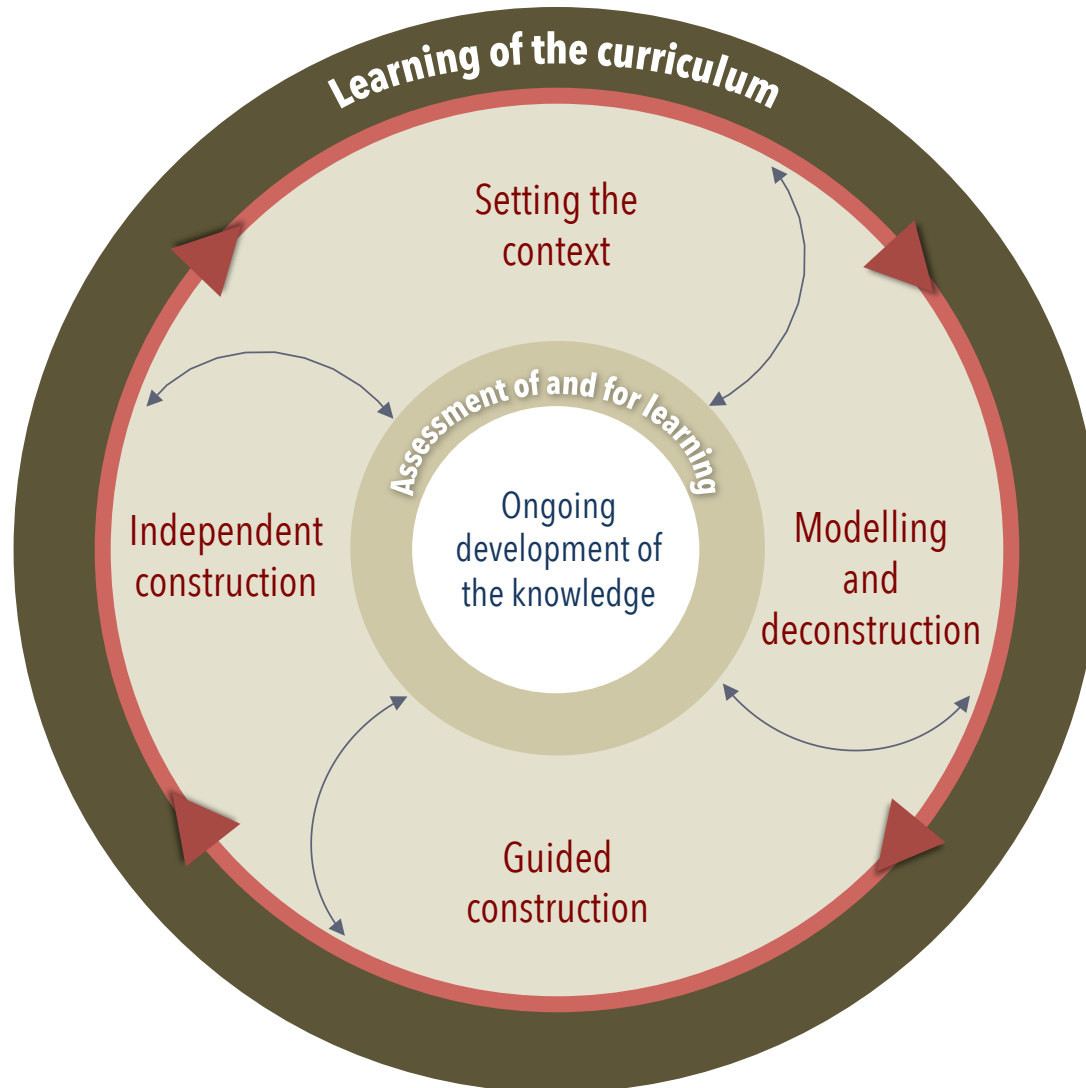
Where do you have to write it down?

4. Write down your class and class number on a piece of masking tape and stick it on the back of the mask model.



A Teaching and Learning Cycle that is informed by the development of the brain through language: **language and thought**

Adapted from models in, amongst others, Martin JR (1999) 'Mentoring semogenesis' In Christie F (ed) *Pedagogy and the shaping of consciousness: Linguistic and social processes*. London, Cassell.



Typically shared teacher and student responsibility

Maximum teacher responsibility

Maximum student responsibility

Shifting responsibility from teacher to students

