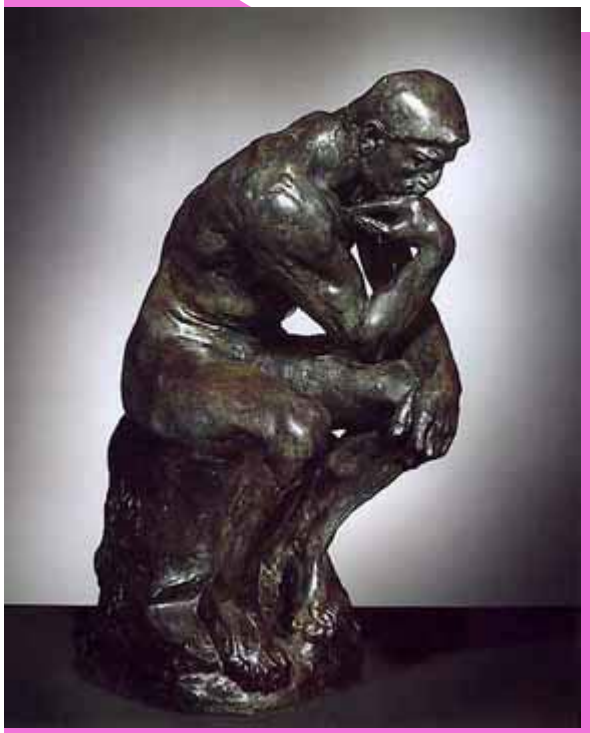
Thinking and Learning



NSW Secondary Deputy Principals Conference

September,2008.

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A good teacher makes you think even when you don't want to.

(Fisher, 1998, ***Teaching Thinking***)

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Overview

- What is this workshop about?
- Closing the gap

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Change

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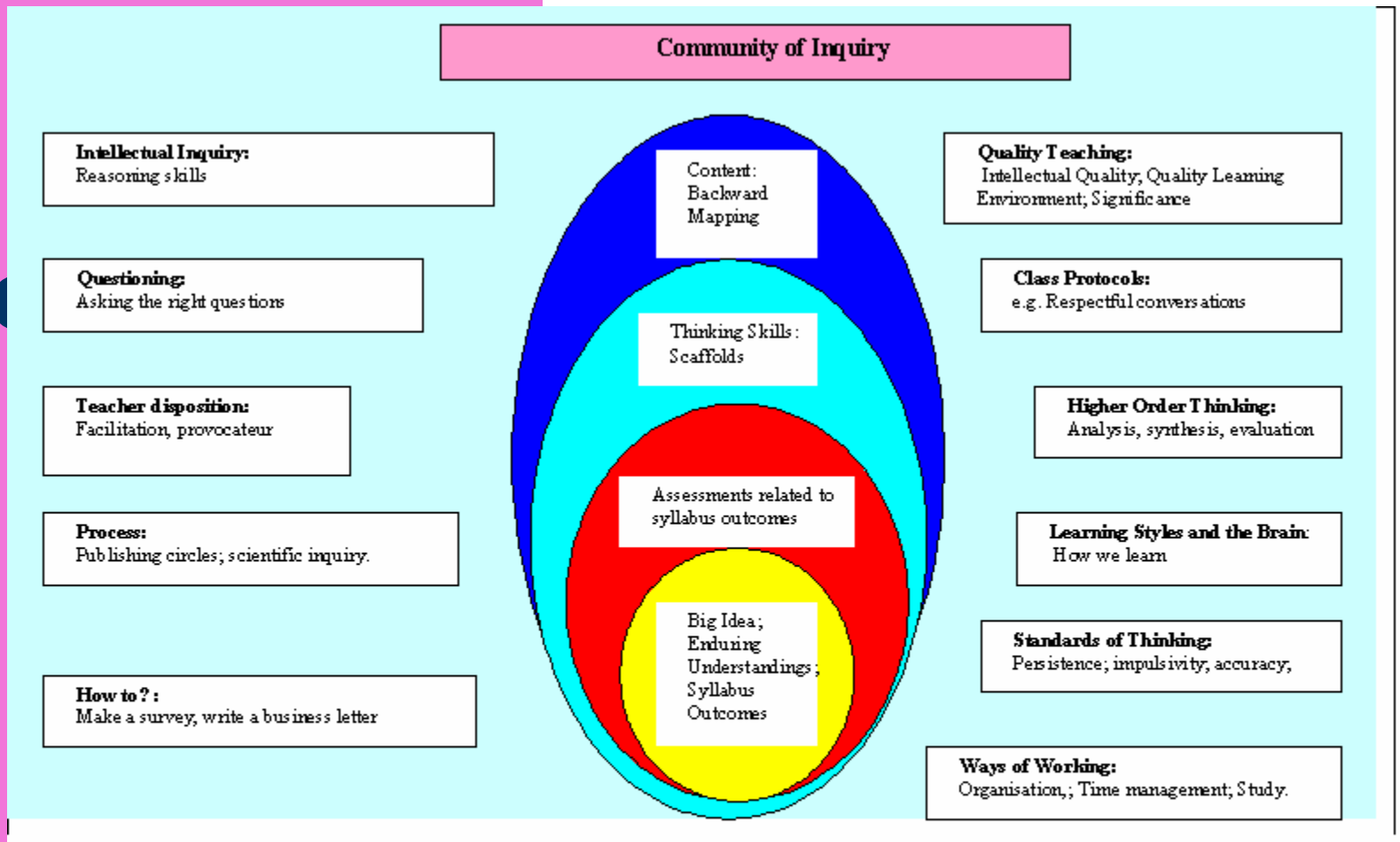

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What affects Student learning?

- Student learning is affected by:
  - Engagement, motivation, literacy
  - Relevant curriculum and assessments
  - Problematic curriculum and students constructing their own meaning
  - HOT
  - Teacher quality
  - High Teacher expectations
  - Teacher expertise
  - Explicit teaching of everything

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Pedagogical complexity

- Thinking
- Habits of mind
- Protocols
- Learning styles
- Memory
- QT
- Class environment /behaviour/Listening/Behaviour/Respect
- Teacher dispositions/open/flexible/ beliefs
- Brain and brain training
- Problematic curriculum
- Meaningful and authentic assessments
- Questioning
- Teaching strategies

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Thinking explicitly

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QT

- Quality teaching
  - what does it look like, sound like
  - What does deep knowledge and deep understanding actually mean?

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HSC exam connection

- Some, examples
  - Business Studies
    - Describe, discuss, analyse, evaluate
  - Ancient History
    - Describe, explain, assess, evaluate
  - Biology
    - Explain, account for, predict, justify, assess

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Think pair share

- Think of a lesson when you were really chuffed at the student thinking and learning you had promoted.
  - What happened?

- share !

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Have targets and goals

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Goals – What are they?

- What are your goals for this term? Next year?
  - Professional / something new / something you will try that's different?
- Students also need goals
  - for life
  - for learning
  - For quality
  - Each lesson
- "If you don't know where you are going, how will you know when you get there ?"

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- What would a thinking classroom look like?
  - Look like
  - Sound like
  - Feel like

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What is thinking?

- Activity: Thinking Words
- Define thinking!
- What do you do when you think?

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So what is thinking?

- How hard can it be?
- What do we need to do to get students to think?

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Reflection

- Activity: Writing in non dominant hand

- Is there anything more important than thinking?
- Can thinking more important than breathing?
- What are you thinking about now?
- Can you stop thinking?
- HW- Are you thinking when you dream?

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Why think?

- What does it mean to think well?
- What is the cost of not thinking well?
- Napoleon , Robert Fulton and the defeat of the British navy! Or
- Hurricane Katrina
- A life skill

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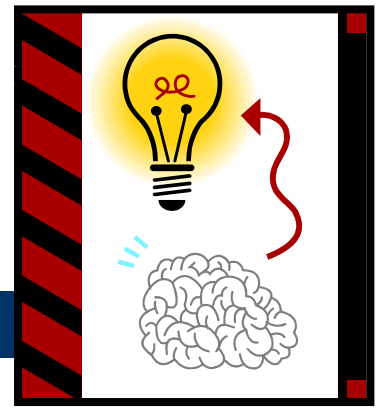
The Brain



- The Brain
  - Learning,
  - Memory,
  - Learning styles
  - Physical

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Teaching Thinking explicitly

- Thinking Scaffolds
- Writing scaffolds
- HOT
  - Creative thinking
  - Critical thinking
  - Problem solving

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An example

- **Analyse**: *identify component parts, examine relationships and draw our implications*

Component 1	Relationship between components
Component 2	
Draw out implications	*pull apart concepts and themes, distinguishing between details and judging significance*

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Use it or lose it

- Think like an athlete; train your thinking like an athlete
- Can you get a bigger brain
- Examples of training
  - HOT / scaffolds
  - Suduko
  - Chess
  - Brain teasers

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Da Vinci

- “Just as iron rusts unless it is used .. So our intellect spoils unless it is kept in use”

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Memory and Remembering

- song

Remember_song.wmv

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Thinking Tools

- Blooms

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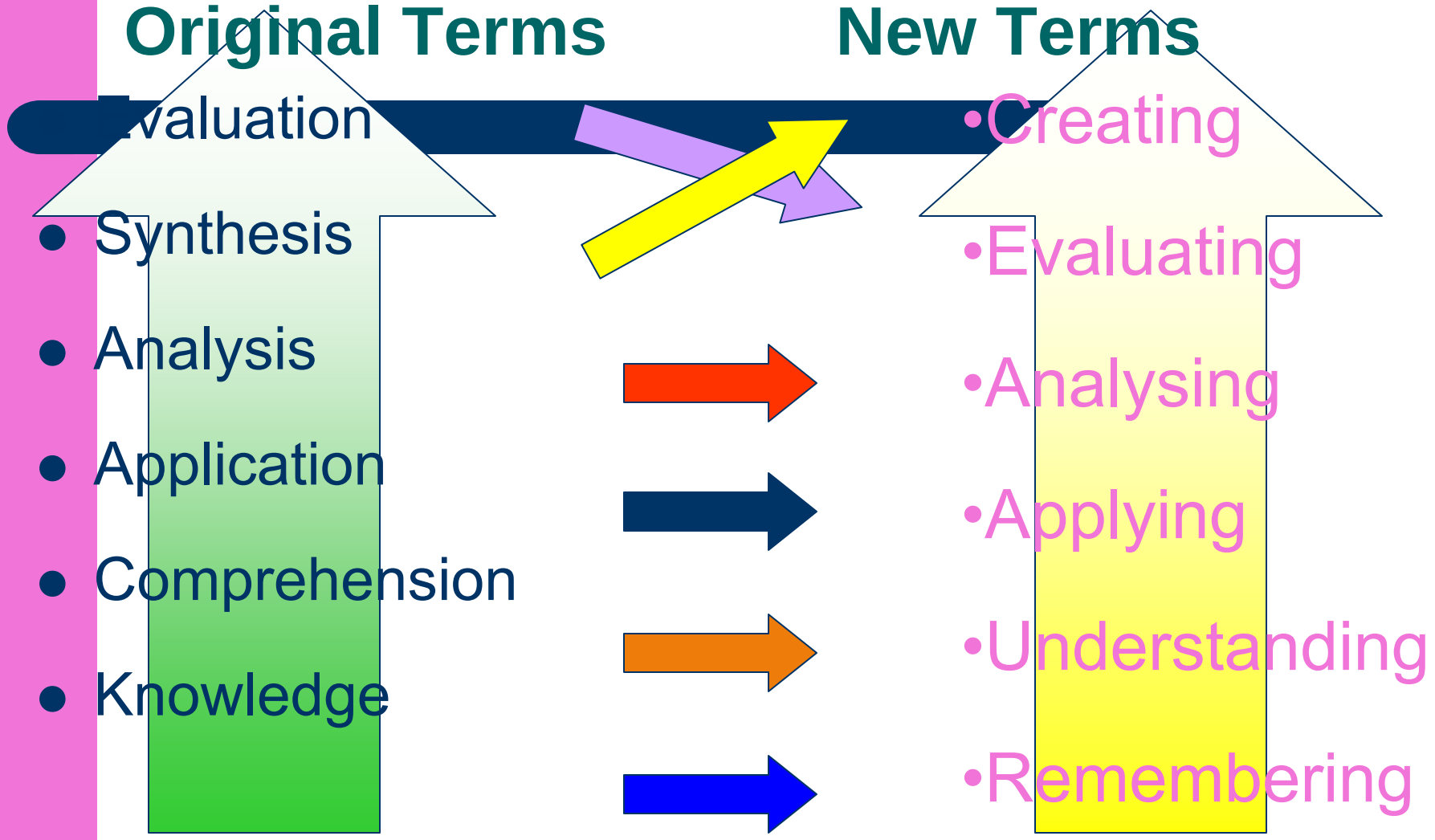
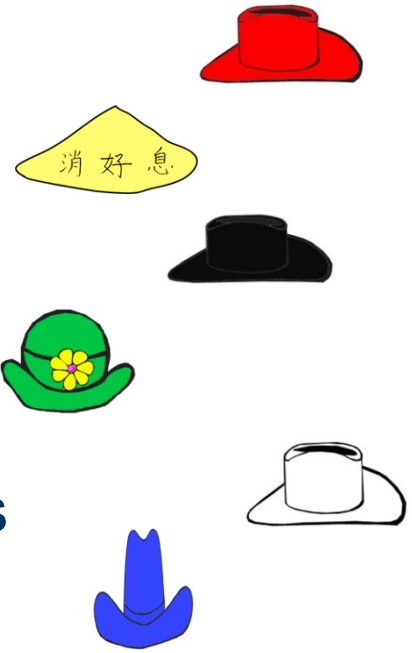


(Based on Pohl, 2000, ***Learning to Think, Thinking to Learn, p. 8***)

Thinking Tools

De Bono

- Red Hat – emotions - feelings
- Yellow – good pints
- Black hat - bad points
- Green Hat – creativity
- White Hat - information or facts
- Blue Hat - organisation



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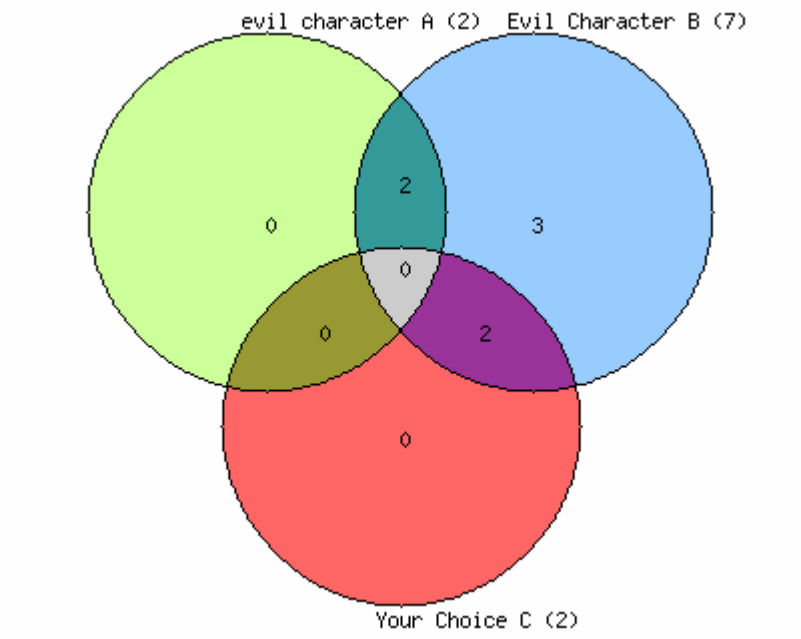
Visual thinking tools

- For example Venn diagrams



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Curriculum and Quality Teaching

- Problematic / Constructivist
- Quality Teaching

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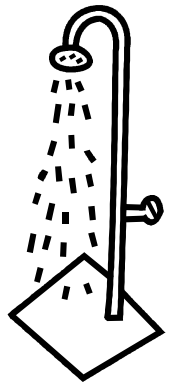
Problem solving



- How much does a shower cost?
- How high is a mountain?
- What is evil?
- What is poetry?

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Assessments

- Relevant
- HOT
- Authentic

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Assessments for learning

Compare Use a Venn diagram to **compare** two different products	**Evaluate** Choose a product that is environmentally friendly. List the **criteria** to **evaluate** its effectiveness.	**Analyse** Find out **why** people choose certain products? What are the main influencing factors?
Perspectives Choose a product and **decide** on three perspectives on its influence on the environment	**Reflect** **Think carefully** about your use of these products. Which ones could you do without? What substitutes might there be?	**Imagine** You are a product marketer. How would you market a new environmentally friendly product to new buyers?
Classify Make a list of 20 environmentally friendly products. Put them into groups and label them?	**Justify** The government has decided to decrease the number of available household cleaning products. Which would be recommended to be discontinued and why?	**Invent** Create an environmentally friendly cleaning product.
Wilson and Murdock:	*How to succeed with thinking:*	*2006* *Curriculum corporation*

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Assessments by Blooms

- Develop five questions on whales

Knowledge	What?
Understanding	How or why?
Analysis	
Evaluation	
Synthesis	
Creativity	

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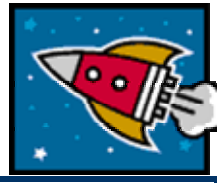
ple Unit : Space



Remembering	Cut out “space” pictures from a magazine. Make a display or a collage. List space words (Alphabet Key). List the names of the planets in our universe. List all the things an astronaut would need for a space journey.
Understanding	Make your desk into a spaceship, Make an astronaut for a puppet play. Use it in our solar system.
Applying	Keep a diary of your space adventure (5 days). What sort of instruments would you need to make space music? Make a list of questions you would like to ask an astronaut.
Analysing	Make an application form for a person applying for the job of an astronaut. Compare Galileo’s telescope to a modern telescope. Distinguish between the Russian and American space programs.
Evaluating	Compare the benefits of living on Earth and the moon. You can take three people with you to the moon. Choose and give reasons. Choose a planet you would like to live on- explain why.
Creating	Write a newspaper report for the following headline: “Spaceship out of control”. Use the SCAMPER strategy to design a new space suit. Create a game called “Space Snap”. Prepare a menu for your spaceship crew. Design an advertising program for trips to the moon.

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Questioning ??????????

- Closed
- Open
- Inquiring
- Students asking questions of each other
- Students posing problems
- explixit

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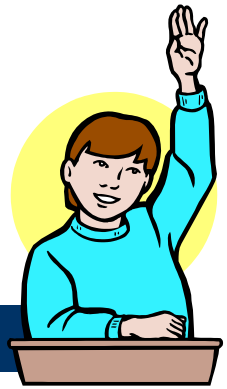
The Question Matrix Grid

Widderhold(1991) Cooperative learning and critical thinking: the question Matrix(Hawker Brownlow)

	Event	Situation	Choice	Person	Reason	Means
Present	What is?	Where/ when is?	Which is?	Who is?	Why is?	How is?
Past	What did?	Where/ when did?	Which did?	Who did?	Why did?	How did?
Possibility	What can?	Where/ when can?	Which can?	Who can?	Why can?	How can?
Probability	What would?	Where/ when would?	Which would?	Who would?	Why would?	How would?
Prediction	What will?	Where/ when will?	Which will?	Who will?	Why will?	How will?
Imagination	What might?	Where/ when might?	Which might?	Who might?	Why might?	How might?

The answer is



- 15?

- Whales?

BUT

- What is the question?

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Developing a Community of Inquiry

- Activity: Communities

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Backward mapping

- Ub.D
- Enduring knowledge and understanding
- Knowledge ≠ understanding
- Uncoverage versus coverage

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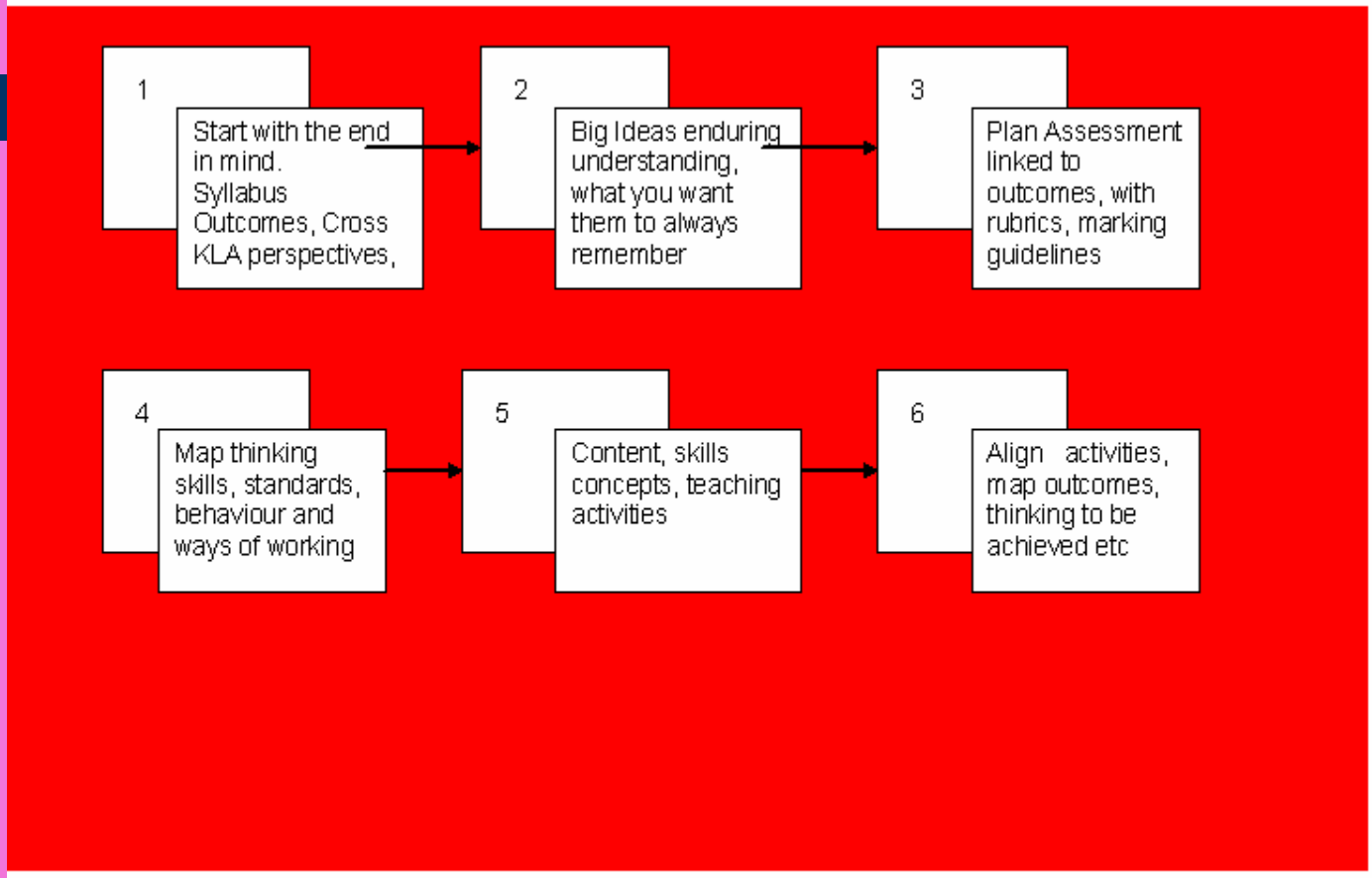
Backward Mapping Process

If you don't know where you are going, how will you know if you get there?



Brain strengthening

- Increasing the synapses
- Connecting the corpus calosum
- Improving left and right

- Activity:

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Brain Games (stroop)

BLUE	GREEN	YELLOW
PINK	RED	ORANGE
GREY	BLACK	PURPLE
TAN	WHITE	BROWN

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Creative brain

A	B	C	D	E	F	G	H
L	R	T	L	L	R	L	T

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exercises

- Non dominant hand
- Crossing your hands
- Crossing your arms
- Finger to nose
- balance

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Habits of Mind

- Attitude to learning
- Disposition to learning
- Standards of thinking

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Change

- If you always do what you've always done ….
- Remembering: Reflection 80% rule

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Maintain your sense of humor in the face of adversity …

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Take a risk; try something new

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Reflect

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Evaluate

- Evaluation for progress and learning

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HW – setting goals

- What will you try tomorrow and next week to improve student learning?
- How will you ensure you do it?

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Think outside the box

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Resource list

- Cam, P: *Twenty Thinking Tools.* (ACER 2006)
  This book outlines thinking skills and explains to teachers how to approach key thinking skills e.g. comparisons, explanations etc. ****
- Caviglioli, O. Harris, I. and Tindal, B: Thinking *Skills and Eye Q: Visual Tools for Raising Intelligence* (Hawker Brownlow 2005) **** Helps teachers provide students with visual clues and graphic organisers for thinking.
- Costa, AL and Kallick, B; *Habits of Mind; Series of 4;* ASCD (Hawker Brownlow 2000)
- Edwards, J: *How to Teach Thinking Skills;* (Think Shop; Hawker Brownlow 2005)
- Practical activities and worksheets to teach thinking ****
- Golding, C; *Thinking with Rich Concepts; Rich Concepts for Philosophical Questioning in the Classroom*. (Hawker Brownlow 2006)
- Outlines concepts and dialogue based on questioning.
- Golding, C; Developing a Thinking Classroom; (Hawker Brownlow 2005) ****
- Lots of thinking concepts and underlying thinking conditions.
- Gunningham, S; *Thinking Allowed; Thinking Tools for the Mathematics Classroom* (Hawker Brownlow 2003)
- Langrehr, J: *Thinking Lessons*. (Curriculum Corporation2003)
- This book shows how to design lessons that force that develop thinking skills.
- Langrehr, J: *Assessing Critical and Creative Thinking* (Hawker Brownlow 2005) ***
- This book contains a series of tests for critical and creative thinking.
- Langrehr, J: *Thinking Lessons; Creative and Critical Thinking in the Middle Years* (Curriculum Corporation 2003)
- Related to the book above and develops lessons for thinking.
- Lipman, M., Sharp, A.M. and Oscanyan, F*; Philosophy in the Classroom* (Temple University Press1980) (ACER)
- Background information on philosophical thinking and inquiry based learning.
- Luongo-Orlando, K; *Authentic Assessment;* (Pembroke 2003) (Curriculum Corp)
- Great book with lots of proformas. *****
- Morgan, N and Saxton, J: *Asking Better Questions* (Pembroke1994) *****
- Teacher conversations that demonstrate good questioning.

- Murdoch, K. and Wilson, J: *Learning Links; Strategic teaching for the Learner-Centred Classroom* (Curriculum Corporation 2005) This book outlines how to develop a community of inquiry. It outlines the inquiry process, and how to engage students in the curriculum.
- Pohl, M: *Teaching Complex Thinking; Critical, Creative, Caring.* (Hawker Brownlow 20000)
- Lots of graphic organisers
- Reid, L; *Thinking Skills Resource Book*; (Hawker Brownlow (1993)
- Uses thinking words and gives activities
- Schoenfield, M and Rosenblatt, J; *Adventures with Logic:* (Hawker Brownlow1989)
- Has many activities to allow practice in logic
- Splitter, L; Sharp, A: Teaching *for Better Thinking: A Classroom Community of Inquiry* (ACER 2005)
  This is background reading to problematising the curriculum and effective questioning techniques with and explains the Philosophical underpinnings for inquiry based learning.
- Sprod,T; Books into Ideas; A Community of Inquiry; (Hawker Brownlow 19930
- Uses books to develop thinking skills
- Wiggins, G. and McTighe, J.: *Understanding by Design*; (ASCD 1998) (ACER) ****
  This book explains the process of designing units of work. It focuses on the outcomes and it uses the principles of backward-mapping. This is a practical approach to programming.
- Williams B; In *a Nutshell; Higher Order Thinking Skills; Challenging all Students to Achieve.* (Hawker Brownlow 2003). ****
  Explains each of the important thinking skills and provides graphic organisers to force higher order thinking.
- Wilks, S; *Designing a Thinking Curriculum*;(ACER 2005)
- This is excellent for understanding how to infuse thinking across the school. *****
- Wilson, J and Murdoch, K: *Little Books of Big Ideas; How to Succeed with Thinking.* (Curriculum Corporation 2006)

- Joyce, B and Showers, B: *Student Achievement, through staff development*: (ASCD 2002)
- Stoll, L, Fink, D and Earl, L: *It's about Learning (and It's about Time); what's in it for schools:* (Routledge Farmer 2004) ******
- Jensen, E: *The Learning Brain*: (Turning Point 1995)
- O'Brien, K and White, D: *The Thinking Platform, Strategies that foster Whole Brain thinking in the cooperative Classroom*: (KD Publications 2001)
- Fogarty, R: *How to Teach for Metacognitive Reflection*: (Hawker Brownlow 1994)
- Fogarty, R: *Brian Compatible Classrooms*: (Hawker Brownlow 1997)
- Fogarty, R and Bellanca, J: *Patterns for Thinking, Patterns for Transfer* (Hawker Brownlow1989)

Web resources

- Thinking adventures
- http://www.flatprojects.org.uk/projects/c_centwesteduc/conftoearn.asp
- This is book online – It is step by step lesson sequence about thinking and questioning. (book and the teachers guide). Guided Socratic questioning.
- Students editing newspapers and own writing"
- http://ink.news.com.au/
- Country by country statistical analysis
- http://www.unicef.org/statistics/index_24183.html
- Thinking strategies
- http://www.newhorizons.org/strategies/front_strategies.html
- The Brain
- http://www.pbs.org/wnet/brain/history/index.html
- Brain games
- http://www.brainconnection.com/teasers/
- http://www.gamesforthebrain.com/
- http://www.learner.org/resources/series142.html
- http://www.brainbashers.com/
- Colours games +
- http://faculty.washington.edu/chudler/words.html
- Lesson plans
- http://www.nortellearnit.org/lessons/?gclid=CNexsKqljIwCFRxNYAodFgKY8Q
- http://newzcrew.org/webx?14@@.26c0fcb7
- http://www.lessonplanspage.com/ (with a newsletter)
- http://www.teach-nology.com/teachers/lesson_plans/
- Tools for thinking

- http://www.greece.k12.ny.us/instruction/ela/6-12/Tools/Index.htm
- http://www.teachervision.fen.com/graphic-organizers/printable/6293.html?detoured=1
- http://www.mordialloccluster.vic.edu.au/teachers/tools/organisers.html
- http://www.intel.com/education/tools/index.htm
- Maths
- http://www.shodor.org/interactivate/activities/
- Reading writing and thinking
- http://www.readwritethink.org/lessons/index.asp?grade=0&strand=0&engagement=0
- Questioning techniques
- http://changingminds.org/techniques/questioning/socratic_questions.htm
- Habits of mind
- http://www.habits-of-mind.net/
- General
- http://www.sitesforteachers.com/ (catalogues of millions of resources for teachers. Includes lessons, rubrics, books, certificates)
- http://www.thelearningfederation.edu.au/tlf2/ (great on line resources for subjects online)
- Publishers with great resources
- http://www1.curriculum.edu.au/catalogue/ +newsletter (free)
- thisweek@lists2.curriculum.edu.au
- Robert Fisher; teaching thinking

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