

**The multiple ways of knowing: A
framework for fostering effective academic
learning and for unpacking learning
difficulties'**

**AALL professional development series
'Connect. Inspire. Share.'**

Effective learning and teaching means assumptions

A challenge faced by educators: decision making

Teaching is a strategic decision-making process

All teaching involves assumptions about the learner

What types of decisions will Mr Jones need to make?

What a person knows, their ability to use memory effectively

How student engages with the need to learn and the teaching

What they know about teachers and how to make use of the teaching



What they know about how to learn, to manage their learning, to set goals effectively and implement a learning pathway

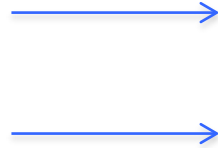
What they know about classroom culture, learning climate, what they've learnt from their cultures about effective learning

What knowledge do we need to make to make these types of decisions effectively?

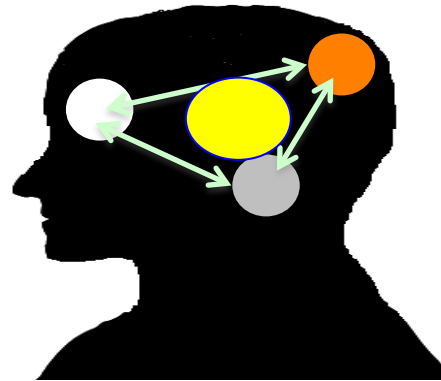
What are the multiple ways in which we do 'know'? A model for describing the multiple ways or aspects in which we know a topic. During learning one or more of these aspects changes. This model is linked with how the brain knows and learns. The implications of the model for providing a shared understanding of knowing and a common language for talking about learning

All learning begins with what we know

All learning begins with what we know.



The information assumes that we can interpret the information in particular ways



What do we use to interpret the information?

What are the ways in which we know?

When there is a mis-match between the assumptions /demands of the information and a person's learning profile, learning is less likely.

What is our learning capacity or learning profile at any time?

We need a model for describing the multiple ways or aspects in which we know a topic. It needs to be linked with how the brain knows and learns.

The model has implications for providing a shared understanding of knowing and a common language for talking about learning

How do you know stress?

Stress is a physiological reaction to a perceived threat

knowing
stress

Stress actions showing helplessness, hyperactivity, difficulty thinking, uncontrollable behaviours

know
stress

The combination or synthesis of the eight aspects of knowing is your overall understanding of *stress*.

The framework gives us a way for thinking about how we interpret or understand an idea.

We call the framework the *multiple ways of knowing* (or MWoK) model.

We can use it to describe what we know about any idea or topic.

During learning one or more of these aspects changes. This model is linked with how the brain knows and learns.

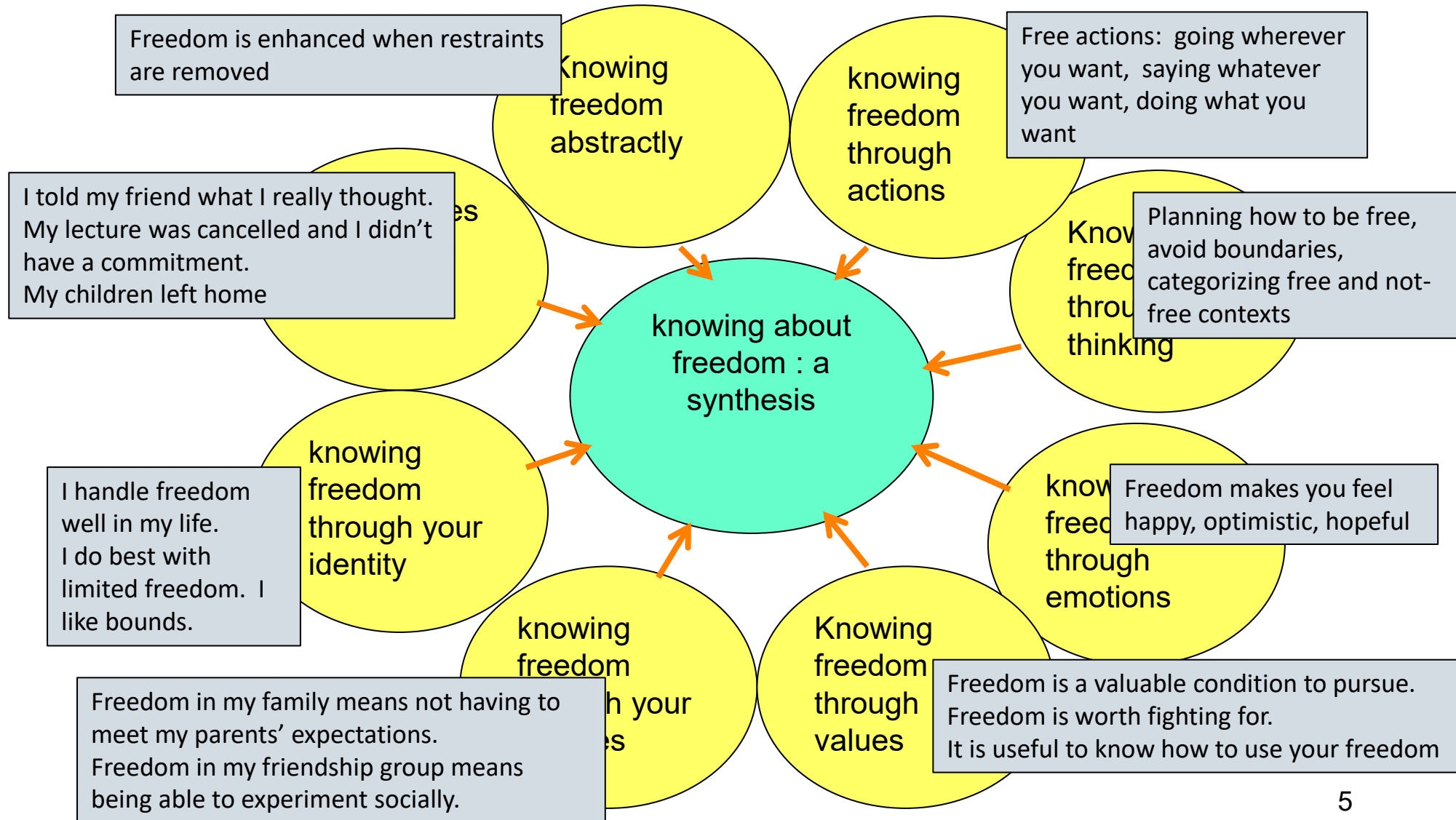
Each way of knowing provides a 'code' for representing or retaining part of the information. Each way of knowing matches a particular part of our brain. Different parts of our brain look for different features in the information.

My friends want to avoid being stressed.
My family uses stress a lot to get things done

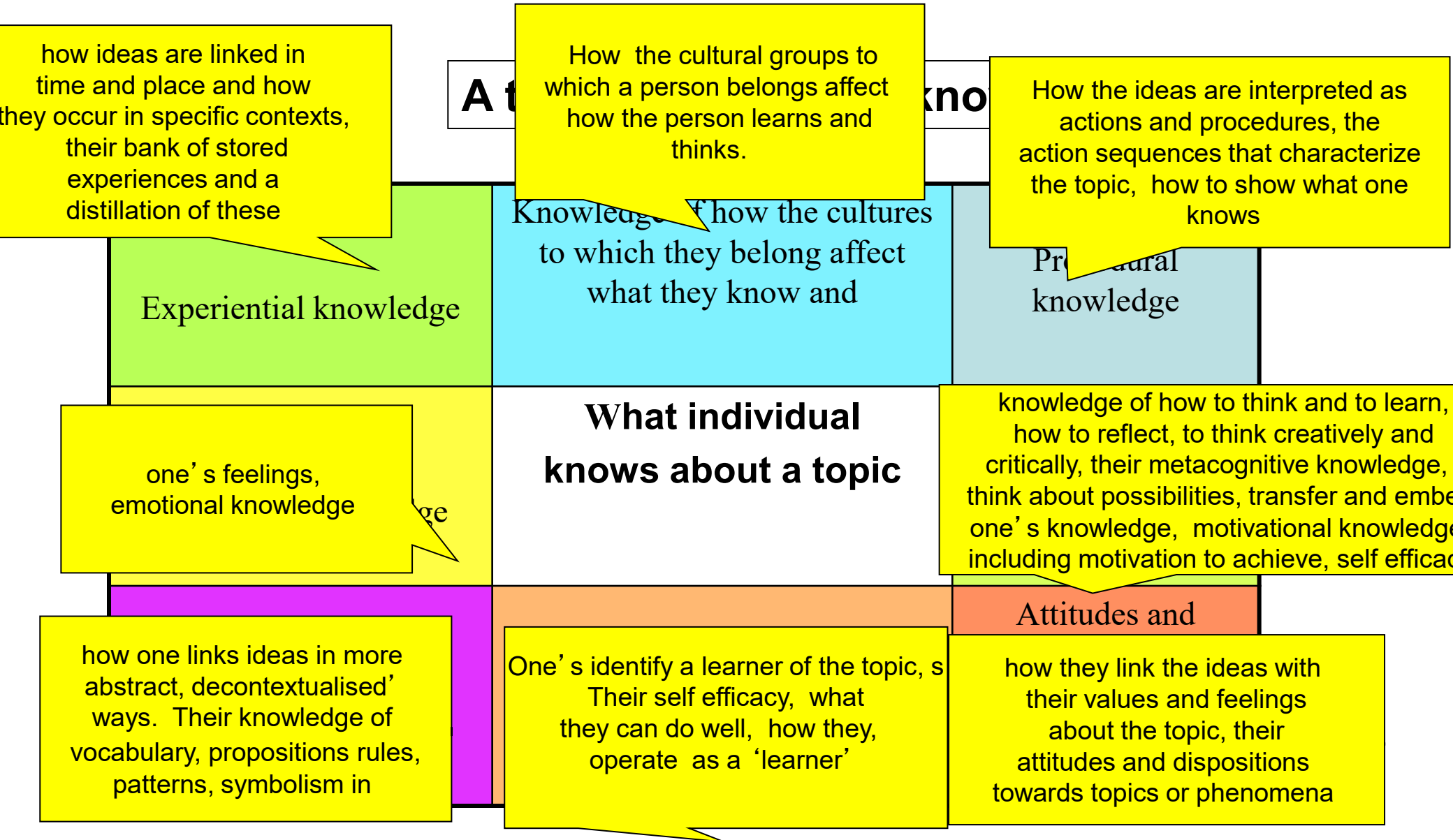
through how
much you value
learning about it

stress can help me be more successful

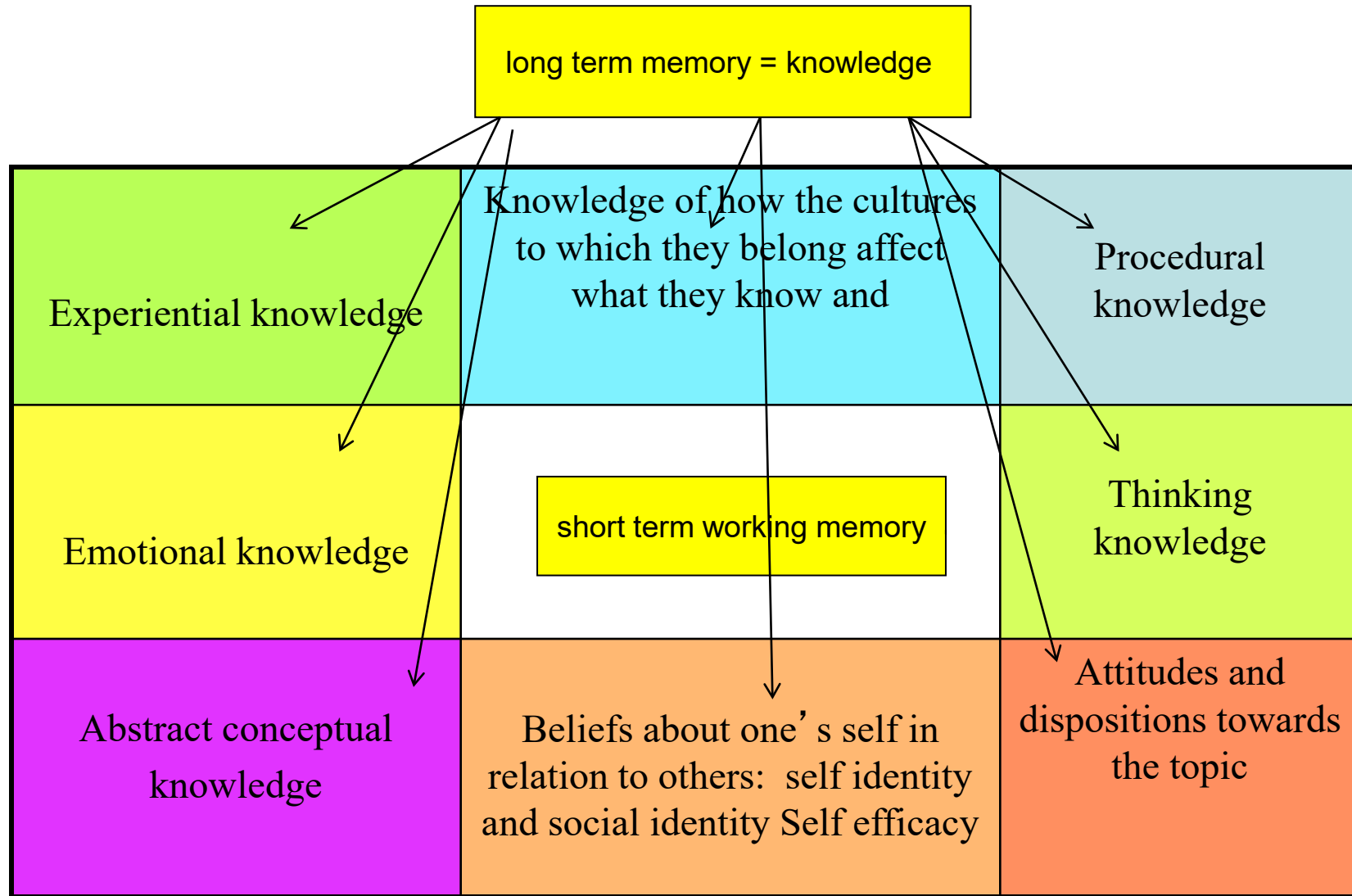
How do you know freedom



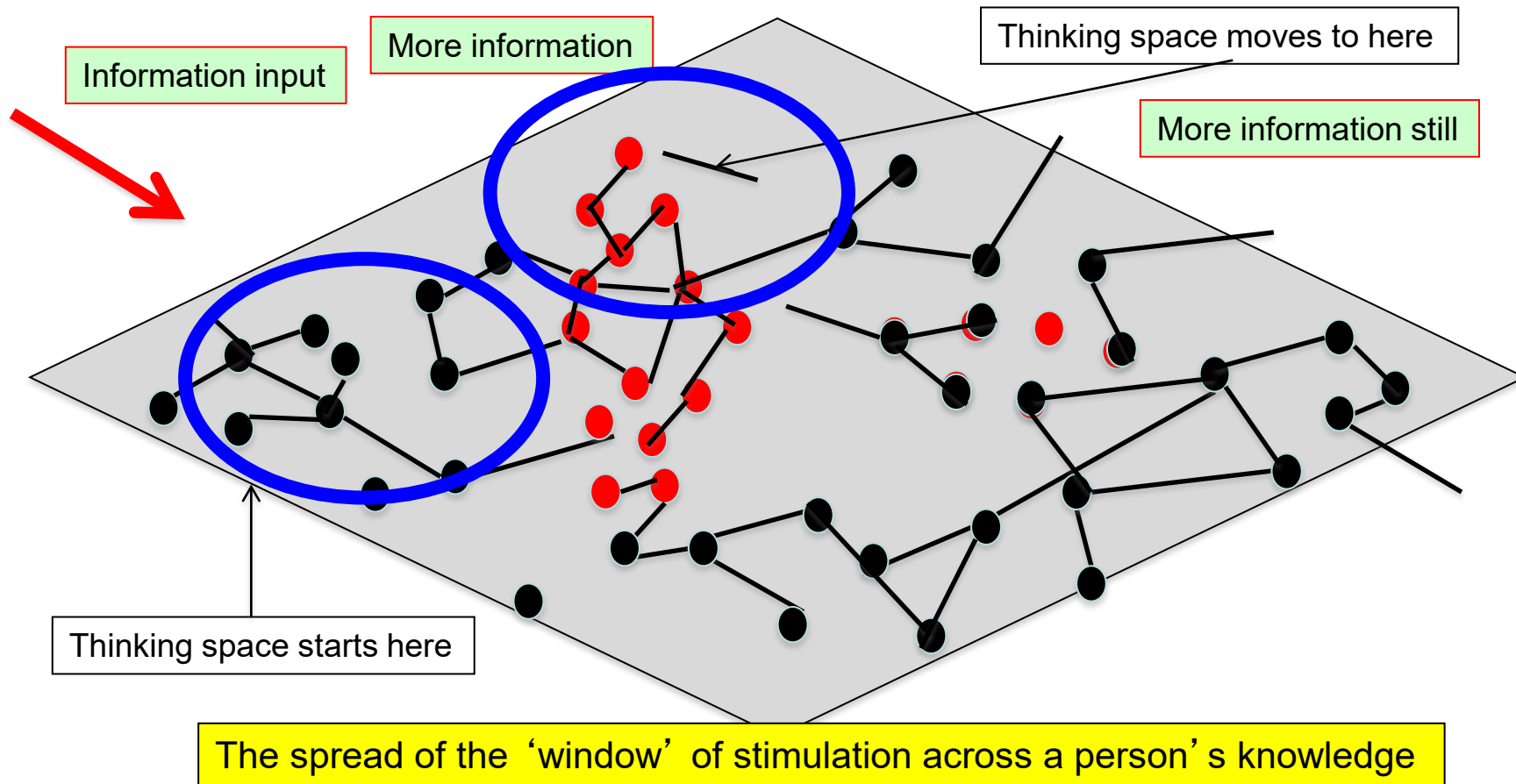
What does knowledge look like ?



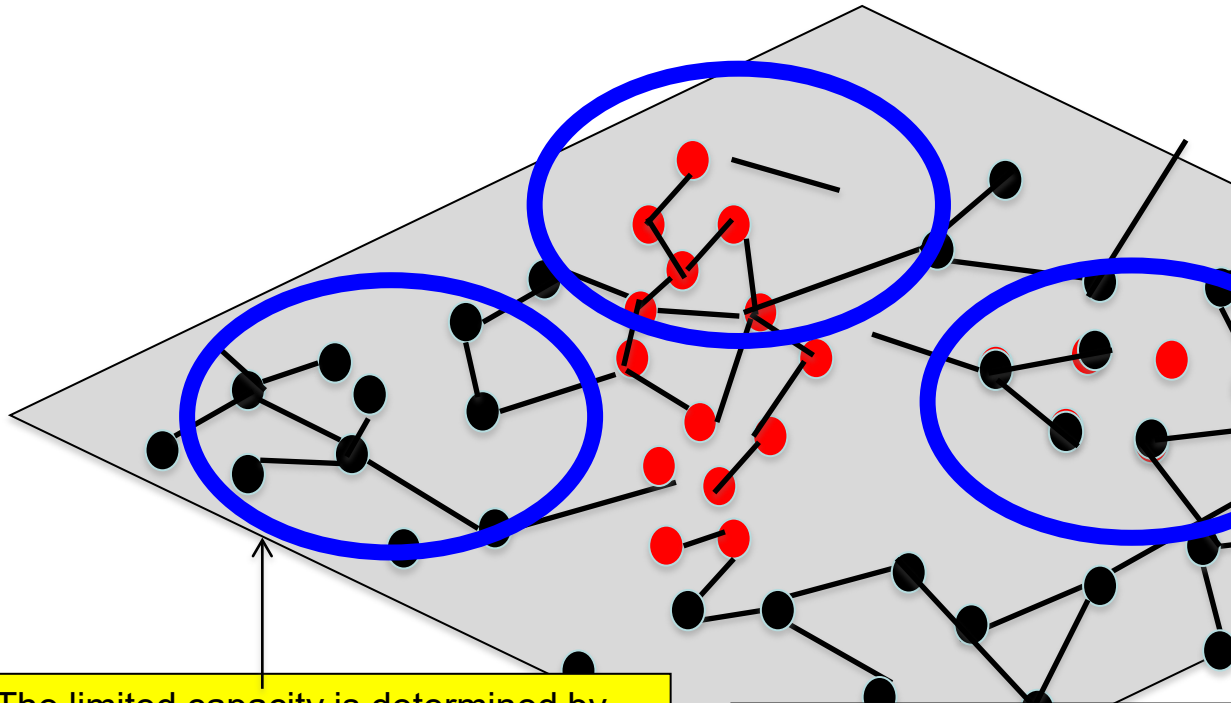
Where do short and long term memory fit in WoK ?



Short term working memory at any time



Short term working memory at any time



The limited capacity is determined by what you know at any time and the learning attention you need to 'invest'. Some ideas are easier to light up – they need less attention during thinking.

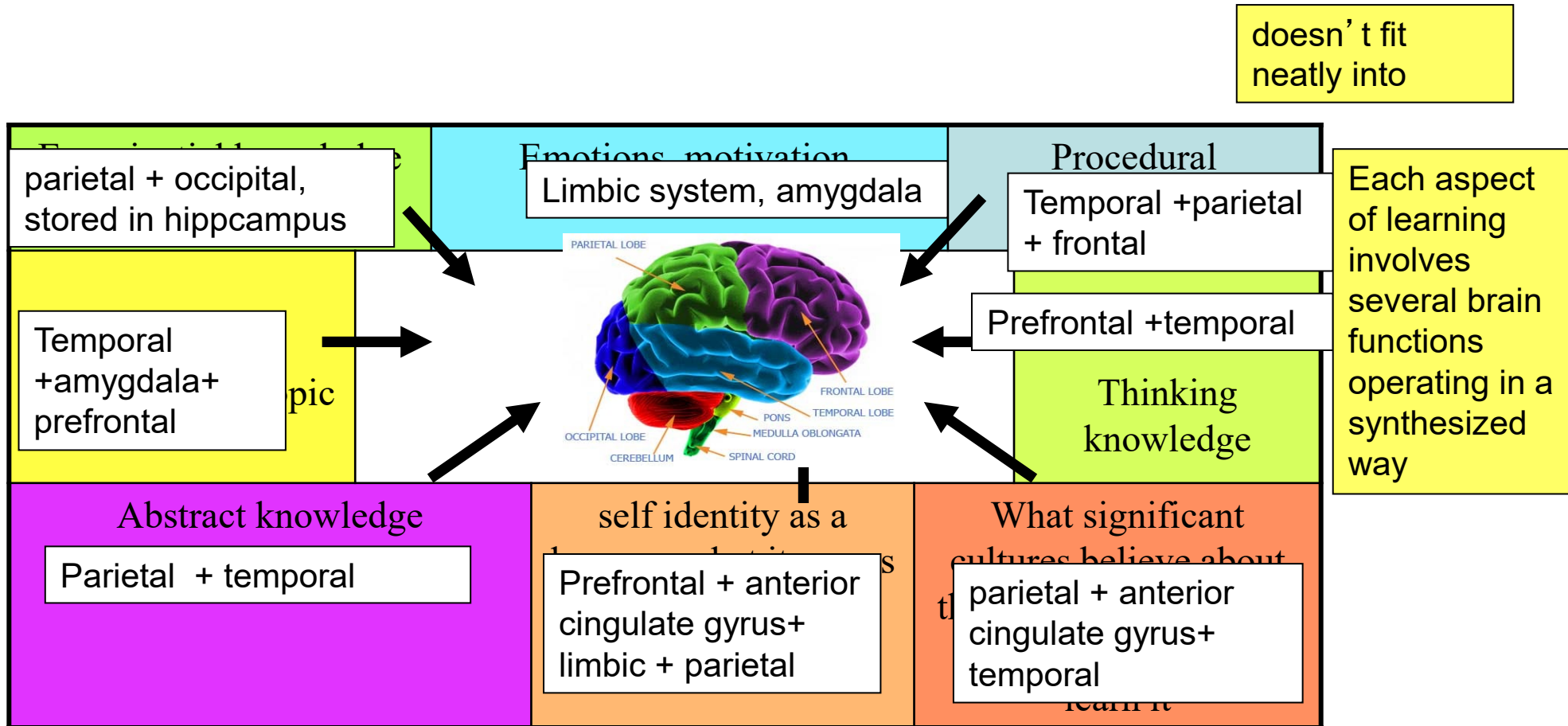
Your working memory is dynamic. It can be located in any topic that you know. We retain or hold the knowledge short-term in working memory by coding it in particular ways.

- using a time and space code to visualise;
- using a semantic code such as thinking about what they mean.
- using an internal action code to store the ideas
- linking emotions or feelings with the ideas.

You can use various short term working memory strategies to retain what you have coded in working memory: rehearsal strategies retain it or 'keep it lit up' longer by replaying it; you can

- visualise the ideas it, imagining yourself doing them,
- repeat the knowledge to yourself,
- use semantic strategies such as linking it with synonyms, putting it into categories,
- use mnemonics.
- th the ideas.

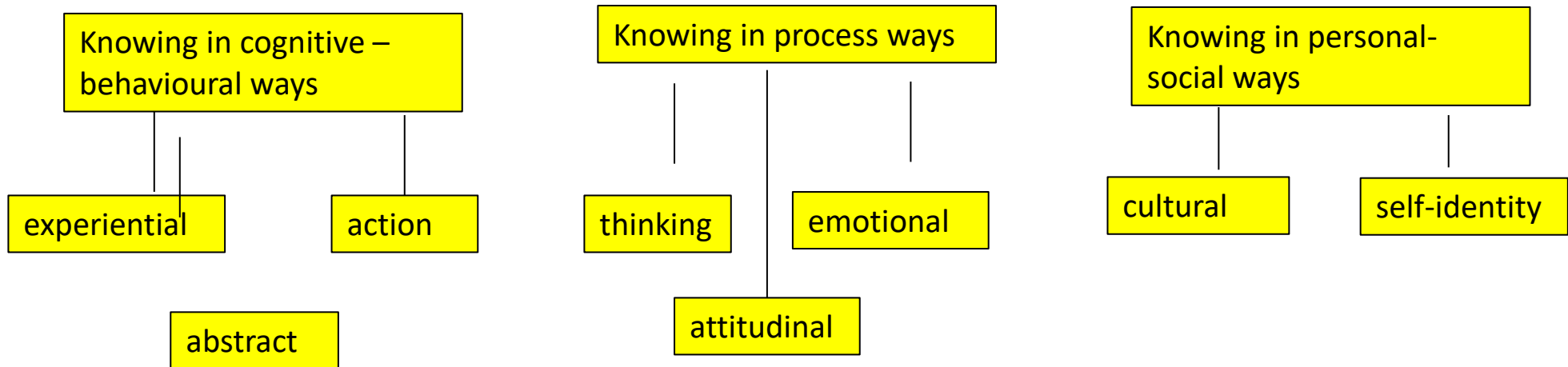
How well do they fit ?



However, there are clear links that can be made between

The MWoK model

The eight ways of knowing can be grouped into three types:



Effective teaching

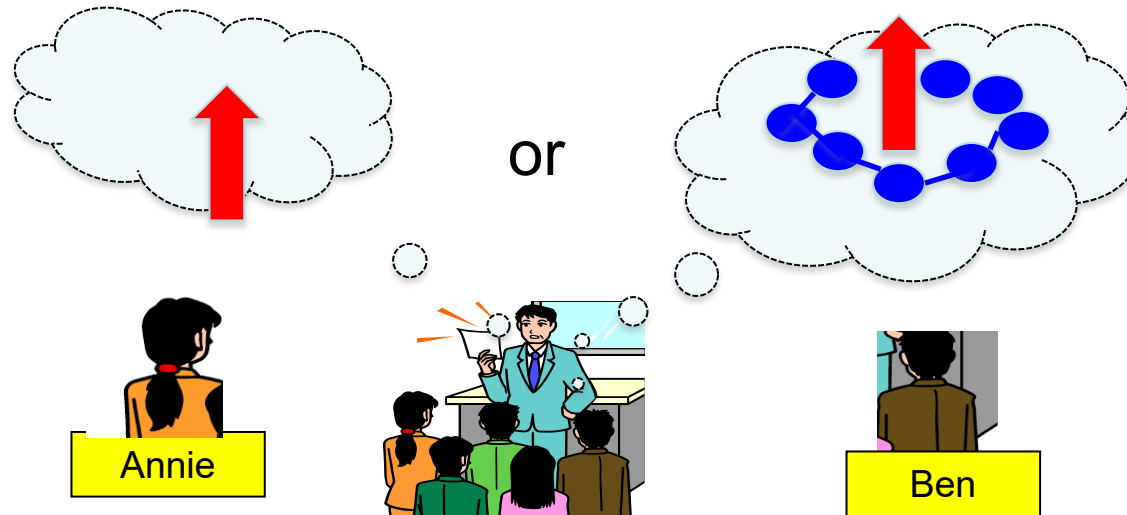
Experiential knowledge	How their cultures affect what they know	Procedural knowledge
Emotional knowledge	What individual knows about a topic	Thinking knowledge
Abstract conceptual knowledge	self and social identity as a learner	Attitudes and dispositions to topic

Experiential knowledge	How their cultures affect what they know	Procedural knowledge
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Apply the knowledge framework to your teaching

All learning begins with what we know. It provides the starting point for learning about any topic . It provides a 'platform' for interpreting the teaching information and for evaluating and using feedback.

Is existing knowledge single or multi-faceted?



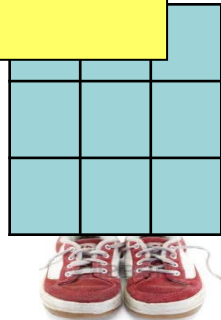
All teaching needs to make assumptions about what students know and how they learn:

- successful learning when the assumptions made actually match how a student learns;
- less successful when a bigger gap between the assumptions made by teaching and how a student learns.

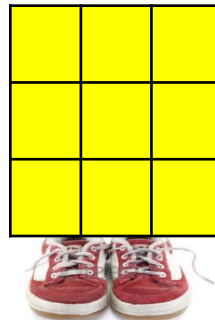
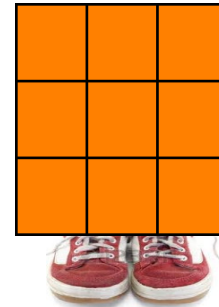
To have an inclusive classroom, I need to reduce the barriers and obstacles for students who learn in ways that don't match my assumptions. .

Why should educators be interested in this model?

The set of ways of knowing determines how each student will interpret any information.

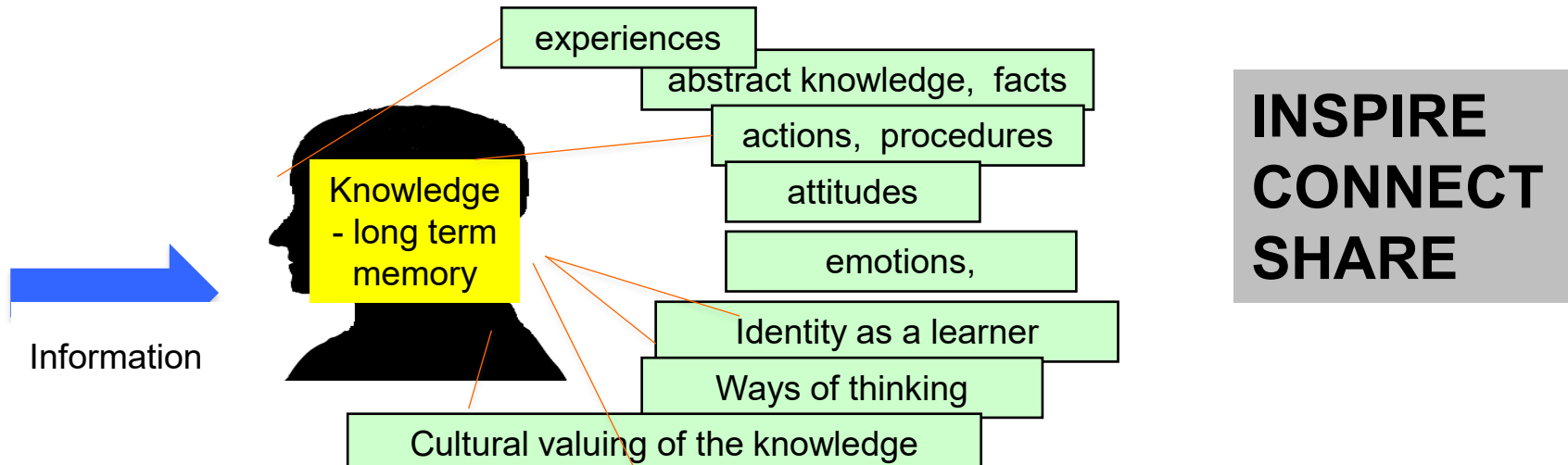


All learning begins with what we know .



Anna uses the experiential way of knowing more than the abstract way, while Billy shows the opposite patterns. He knows that Cindy has a negative self identity when learning science and that Dani is not as able to think in patterns as Billy

MWoK: starting point for learning



We use MWoK to

- identify the ways of knowing our teaching needs to target
- describe learning profiles of exceptional learners
- interpret students' learning behaviours in the classroom; formatively and to evaluate the match between the teaching and students learning.
- differentiate your teaching to match the learning profiles of exceptional learning students.
- analyze challenges that arise in classrooms and schools from a learning-teaching
- build a common language for understanding and talking about knowing and learning.

Thank you for listening

**Very best wishes
with your future work**

The episodic or experiential way of knowing

Experiential aspects of knowledge

Individuals have a bank of stored experiences and a distillation of these, their experiential or episodic knowledge. Ideas are defined in terms of specific situations or contexts. We recall these as images. They are personal and subjective and unique to the individual. People can also have virtual images.

In each experience the ideas are linked in time and place and include the relevant feelings and the actions. From their experiential knowledge learners distil or draw out typical ideas, such as the stereotypic or prototypic images.

Pharaoh rules!

THE WEALTHIEST, most powerful person in ancient Egypt was the **pharaoh**. He had the support of an army and a team of priests, scribes and officials, but the pharaoh alone decided how Egypt would be ruled. In fact, the people saw him as a god.

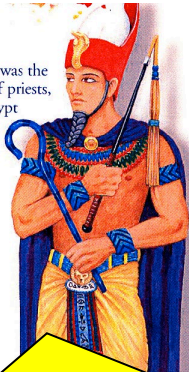
Two into one

Ancient Egypt was once divided into two kingdoms — Upper Egypt and Lower Egypt. Each was ruled by a king. The king of Lower Egypt had his capital in Buto, and the king of Upper Egypt, in Hierakonpolis. Around 3100 BC, it is thought that these kingdoms were united under King Menes. He set up his capital in Memphis.

During these three kingdoms, Egypt's rulers (eventually called pharaohs) came from some 30 dynasties. When a pharaoh died, his eldest son became the next pharaoh, unless a man from another family seized control and started a new dynasty. Sometimes the pharaoh's wife or eldest daughter ruled for a short time if the eldest son was very young.

Heavenly powers

The ancient Egyptians saw their pharaoh as a man with supernatural powers. He was

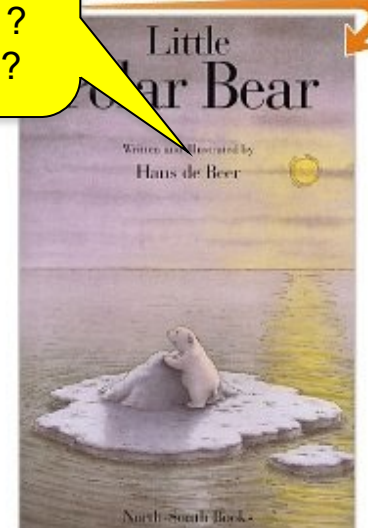


Imagine you were in ancient Egypt. What do you notice about this person? Who might be other people?

Experiential knowledge	How cultures affect what you know	Procedural knowledge
Emotional knowledge	What individual construct virtual experiences	Thinking edge
Abstract conceptual knowledge	self and social identity as a learner	Attitudes and dispositions to topic

Imagine you were the little polar bear. What would you hear /see ? How would you feel ?

Click to **LOOK INSIDE!**



Experiential or episodic knowing

Stored images of what happened in particular places at particular times: an episode, 'visual/spatial' knowing, 'nonverbal' knowing.

Each episode contains perceptual information, actions, feelings. Image may be visual, sound, other sensations. Elements are not related semantically. Experiences tell us what, who, when and where, not. how or why.

You use your experiential knowledge 'without thinking' . Implicit or 'tacit'. Episodes are relatively easy to learn.

Your experiential knowledge is 'future oriented'- it tells you what to do and expect as long as the new situation matches, in important ways, your stored experiences.

Stereotypes and prototypes 'typical' experiences that match a set of experiences and 'prototypic images'.

Experiences allow students to think in wholes that hold a lot of information at once. They can manipulate the items by moving them around, imagining how they change over time.

We use our episodic knowledge in everyday life. When we confront a new situation.

Virtual images and experiences. Induce students to form 'virtual episodes' to facilitate their learning. We visualize ideas as we read or process symbolic information.

Using episodic knowledge to build network knowledge. Students learn to convert their episodic way of knowing a topic to both abstract and procedural ways of knowing. They analyze the episodes, take them apart and note what two or more have in common. They say in sentences or imagine doing what they see or visualize.

analyze it logically
implicit knowledge -----> explicit knowledge

How do we use experiential knowledge?

Interpret /comprehend events



How would you cope if you didn't form appropriate experiential knowledge or if you couldn't use it effectively?

Respond to /deal with unexpected events

I've been waiting for the bus so long



I could ring my mum or see if the timetable has changed

Interpret /comprehend texts

Today we are going to learn about ancient Egypt

Not more pyramids!

I have just read about Tutankhamen

I saw a video about rafting on the Nile!

Know how to behave /solve problems/ what to expect in novel situations



I'd like a coffee. I haven't tried that coffee shop before. I'll see what their coffee is like.

Our coffee is made using camel's milk.

The abstract way of knowing

What you know now about knowing through experiences ?

Did learning more about the value of visualising ideas help your learning ? You may have learnt more about the value of visualising ideas, converting propositions to episodes. Visualising ideas on context often helps you to remember them.

Experiential knowledge

Beliefs about learning-thinking contexts

Procedural knowledge

Thinking knowledge

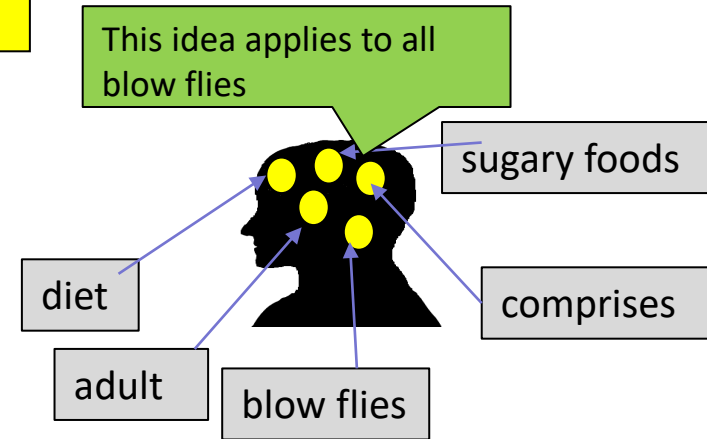
Seeing ideas in contexts or experiences can often help you see how the bits are linked. It is often easier to question them, analyse them and see how things fit together. You can also think about them in more creative or novel ways when you visualize them.

Seeing the ideas in context helps explore or trial them. Visualising ideas in context often helps you to remember them. Putting ideas into a narrative can help you learn and remember them.

Abstract conceptual aspects of knowledge

What does this form of knowledge look like?

The diet of adult blow flies largely comprises sugary foods such as flower nectar, or plant sap. Females lay their eggs on the body of animals that have recently died. The eggs hatch quickly and the larvae, the infant maggots feed on the decaying meat. They then bury themselves in the soil, to re-emerge later as adult flies.



Experiential knowledge	How cultures affect what they know	Procedural knowledge
Emotional knowledge	What person knows about a topic	Thinking knowledge
Abstract conceptual knowledge	self and social identity as a learner	Attitudes and dispositions to topic

A concept is more general than a specific context: They are defined by a culture, often through its language/s.

We can know about a topic in abstract ways. The ideas are 'decontextualised'. We know the ideas in terms of more general properties or features.

Concepts are linked into propositions or semantic relationships. Each proposition links two or more concepts.

Examples: patterns, trends, academic vocabulary and general definitions, rules, formulae, cause-effect relationships, abstract symbolism, images and gestures used in general ways.

Knowing a topic in abstract conceptual ways :

Every topic you teach comprises concepts. A concept is a set of items that share a property. They are the vocabulary or building blocks of a topic.

So you've got an axolotl for a pet at home?



What colour is its head-dress?
Does it spend much time out of water?

When you know something is an example of a concept, you can know its main features or properties

A concept can be represented or symbolized by

words

domain symbols

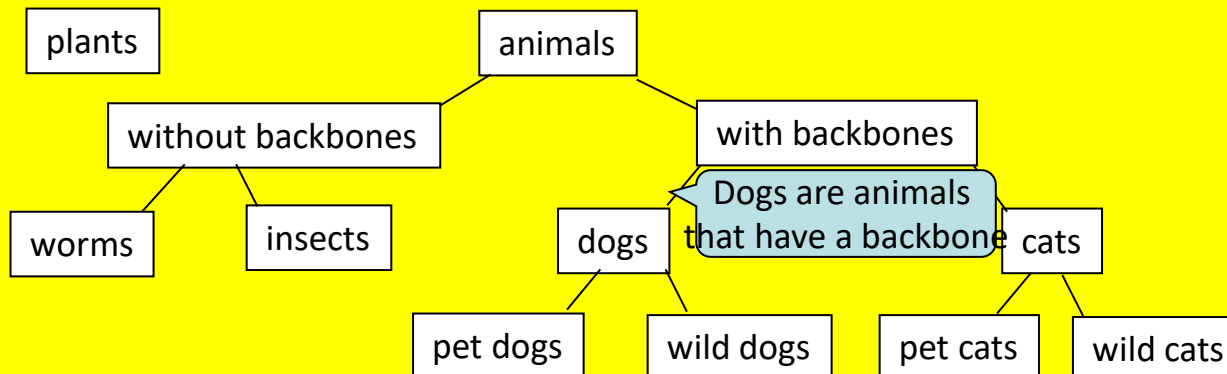
icons

'walk' 'electron', 'car', 'tomorrow' 'yellow'

+ H_2O \$



Concepts are organised in hierarchies. Some concepts contain others and are mutually exclusive.



Concepts and propositions are defined by a culture, often through its language/s.

How do we use our abstract knowledge?

Form and understand ideas more generally.
You use this to transfer and generalise your understanding and apply it in new situations.

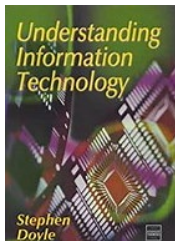
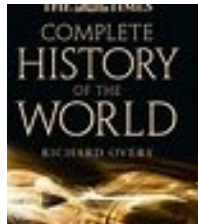
It allows you to form more complex concepts, to recognise shared features and to categorise items and events in their world..

Learn in formal education contexts



Classrooms draw on verbal abstract knowledge

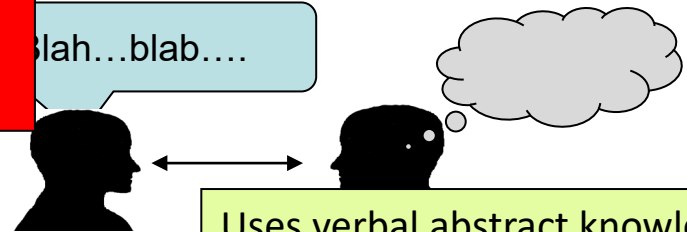
Code and store cultural knowledge



How would lacking an appropriate abstract conceptual knowledge affect a student's learning at school and how they lived their life ?

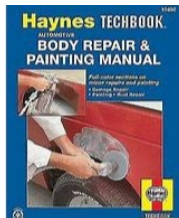
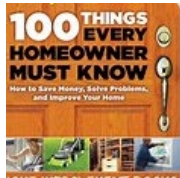
Communicate with others unambiguously

blah...blab....



Uses verbal abstract knowledge to interpret what is heard

Use abstract knowledge to comprehend text



Rio de Janeiro: American swimming gold medallist Lilly King has unfurled a blistering assault on dopers, Russian silver medallist Yulia Efimova and even fellow Team USA member Justin Gatlin, the sprint star who she says has no place at the Olympic Games.

We think differently about our experiential and propositional knowledge

A coin is tossed 20 times. Each time it turns up 'tails' and you reflect on this experience. What will happen on the 21st throw ? What does your experiential /abstract knowing tell you?

I'll get another tail.



Apply Inductive logic

Tap into your experiential knowledge. The context hasn't changed. Pattern will continue.



The next one has to be a head.



Apply Deductive logic

Tap into your propositional knowledge. Probability of heads and tails are equal if coin is fair.

Do I need to modify my proposition ?



Building new propositions from what you know



Activities

Activities : how the term *experience* is used in educational psychology.

While most of these texts use the word experience, it is rarely defined. It is used in various ways:

- as a noun, as in early experiences, language experiences, hands-on experiences, concrete experiences, prior experiences, negative experiences.
- as a verb, for example the person experiences happiness, experiences satisfaction or success. In these situations, a synonym for experience is 'what the person lives through' or feels.

When you read the texts, you need to be clear on the various ways in which this word is used.

Activity. *How children learn to use language.*

Note the characteristics of language development at each phase described and how they move towards the abstract way of knowing.

- how language develops during infancy; infants learn both the actions for saying and using language and also to use language in particular episodes and to achieve social goals.
- how this changes across the early years; children begin to use language to refer to items that are not present but were in earlier episodes.
- how language develops across middle childhood; children's abstract way of knowing develops.
- how adolescents and adults use oral language. They use it in a much more abstract way. They are developing and using their abstract way of knowing in terms of languages.

Module 1 Part 3

All learning begins with what students know. Teachers make assumptions about this. Exceptional learning is more likely when the assumptions don't match how the student learns.

This subject develops a framework for understanding and unpacking the multiple ways in which individuals know and learn. It summarises contemporary research on knowing and learning.

Experiential knowledge	Cultural effects on what you know	Procedural knowledge
Emotional knowledge	What individual knows about a	Thinking knowledge

We can use it to understand exceptional learning and to respond effectively to issues that these students frequently confront.

At the end of each way of knowing you are encouraged to ask:

How would lacking an appropriate level of knowledge in this aspect affect a student's learning at school and how they lived their life?

How can we use this way of knowing to improve the educational opportunities for an exceptional learner?

Most Australian educators refer to the role of prior knowledge in learning. This subject unpacks what this means and what 'existing knowledge', in its multiple forms, actually 'looks like'.

In this Part

The procedural or action way of
knowing

Procedural or action aspects of knowledge

Our procedural knowledge is what we know about how to act, perform, to do or make movements in various ways and to understand the movements and actions of others. Our procedural or performance knowledge is knowing how to act.

It is an understanding of how to move or motion. You can know about an idea through actions. You can encode representations of actions you do. You can also interpret actions and gestures in general ways.

You can know about an idea through actions. You can encode representations of actions you do. You can also interpret actions and gestures in general ways.

Experiential knowledge	How cultures affect what they know	Procedural knowledge
Emotional knowledge	What person knows about a topic	Thinking knowledge
Abstract knowledge	self and social identity as a learner	Attitudes and dispositions



Our brains store sets of action sequences

- How to ride a bike, drive a car, or a tractor.
- How to make a particular type of cake
- How do you use a handsaw or a hammer
- How to change in infant's nappy
- how to do a word processing operation, how to use emails
- How to do arithmetic operations
- How to act in the workplace, use a photocopier
- How to speak in such a way to produce a particular reaction in others
- How to use social media

If our body also has the relevant limbs and muscles for making these movements, we can do them. Our limbs can move in a range of ways. We combine movements in different ways into new action sequences.

maps or plans of 'movement patterns'



move in this way



Our memory for movements is a key part of our overall knowledge

It is also necessary for survival.

Procedural or action aspects of knowledge in a subject

Each subject and topic you teach includes characteristic action sequences that help you understand it. This is your procedural or action knowledge. Action sequences facilitate learning. They include both physical actions we do and actions we do in our heads

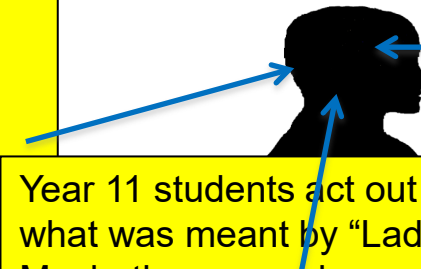
Not only can we act by moving but we can also imagine or feel the actions being done in our brain and imagine the outcomes of doing them. We can also re-run action sequences. We often use 'mental performances' to help us understand the new idea. We sometimes move our hands or legs physically to help us learn to do the mental action sequence in our brains.

Examples of learning through actions by moving parts of your body in particular ways.

Year 7 students learn about how the planets and satellites revolve and rotate.

Year 11 students act out what was meant by "Lady Macbeth was a schemer".

Grade 2 students act out 'being a cave' and 'being a forest' for a text we were reading.



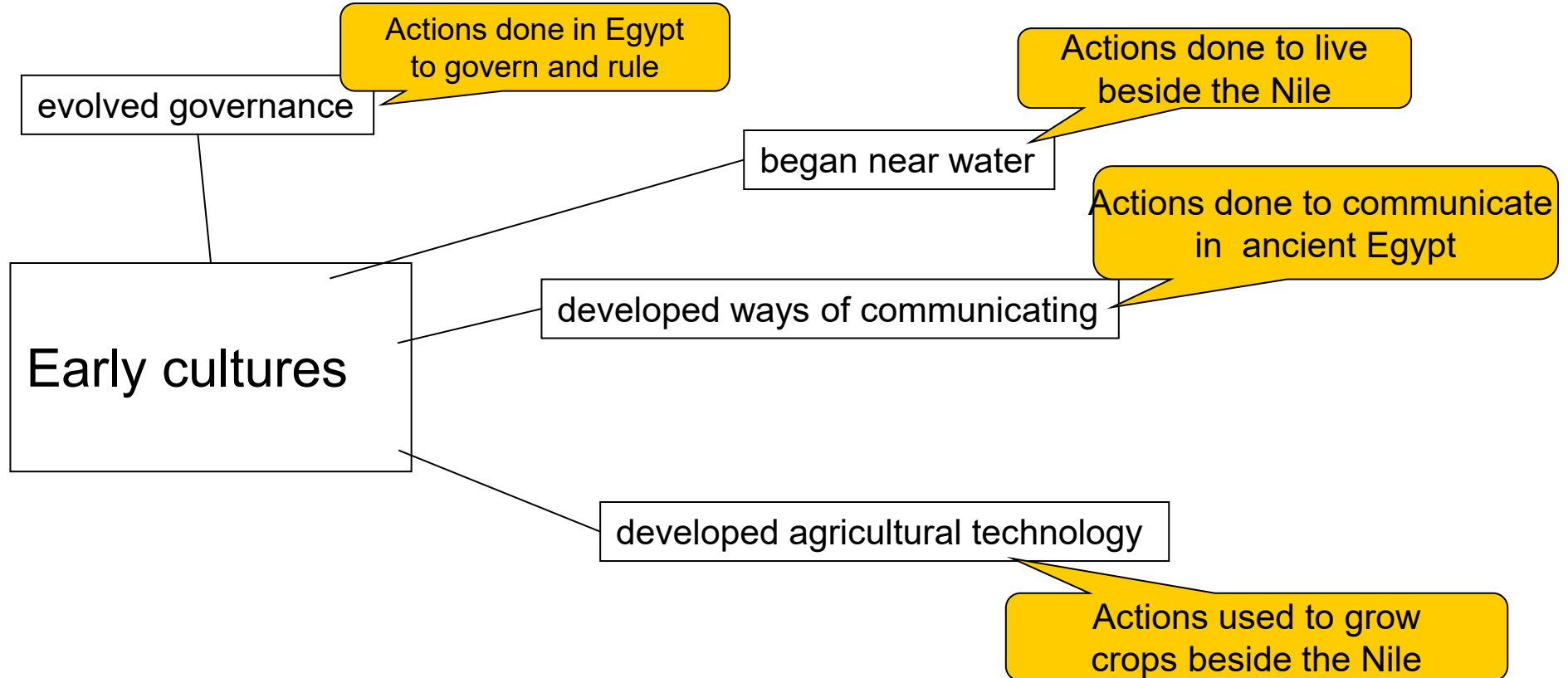
Learning the actions for topics allows you to be able to actually 'do' the ideas.

Some students learn best by beginning to learn a concept through physical actions. They learn by experiencing the new idea as actions they can do with their bodies.

Skills are actions. When a person has automatized a skill, such as hitting a tennis ball, recalling the six time table, paraphrasing a sentence they have read, they are applying particular actions automatically.

Examples of using procedural knowledge : history

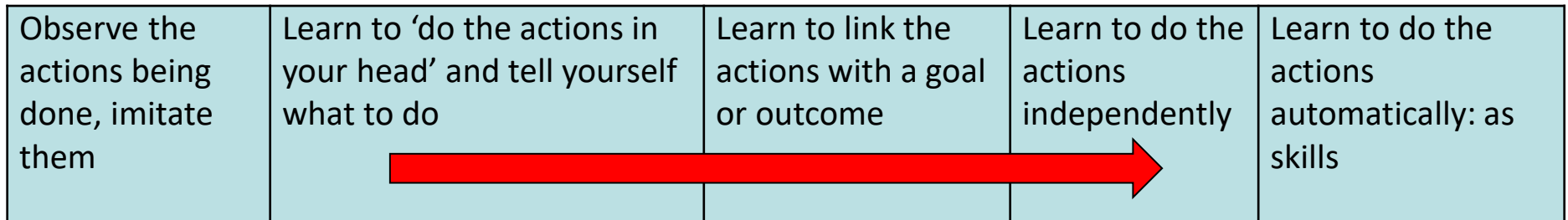
Each subject and topic you teach includes characteristic action sequences that permit you to understand it.



Procedural or action aspects of knowledge

A key part of learning actions is learning how to imitate initially and then to improvise. When you learn to do a novel set of actions you first learn to do them physically with your body by modelling or imitating a model. You learn to do parts of the set in your brain and you also learn to tell yourself what to do. Gradually you learn to do the action sequence independently.

You also learn to purpose of the action sequence and what it is used for. This allows you to use it selectively in a goal oriented way. A sequence for learning a set of actions



Many students need to improve their ability in both imitation and improvisation.

How do we use our procedural or performance knowledge?

To learn how to act in increasingly complex, sophisticated ways in our world, to achieve practical outcomes, solve problems

To show and share what we know, our understanding with others. Actions communicate meaning accurately and unambiguously. By acting, you can show what you know, try it out to see how well it fits get feedback for it, and modify and sharpen it

To learn abstract /academic ideas. We learn many new ideas first as actions before we learn them in other symbolic forms. Without the actions the student may not learn them

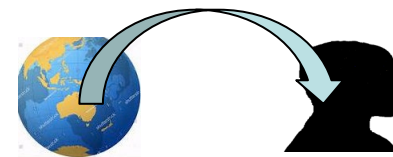
A key way of knowing is to think about how to 'do' the ideas. How do you know key ideas as actions ? What procedures How well can you convert propositions into actions?

How would an inadequate procedural or performance knowledge affect a student's learning at school and how they lived their life ?

To learn social skills. To interact socially, we use a repertoire of actions or performance sequences. We adapt and modify them to fit the context. We can detect when someone is acting in bizarre ways socially. These disrupt the overall social interaction. Functional versus dysfunctional social skills

... survival skills. Living independently to do a range of skills; daily life skills, community living skills. Adaptive living behaviours.

Imitation allows you to form cultural knowledge in your brain



Activities

Activity: How motor development occurs *Physical Development Over Time* (Duchesne et. al., 2019. Note

- examples of procedural knowledge and how its development is linked with cognitive development and emotions.
- the characteristics of physical development, that is, motor skill development across
 - Infancy
 - the early childhood years and the types of skills that develop (p. 33-35).
 - in middle childhood and the increased strategic or selective use of behaviours to interact with one's world.
 - during adolescence

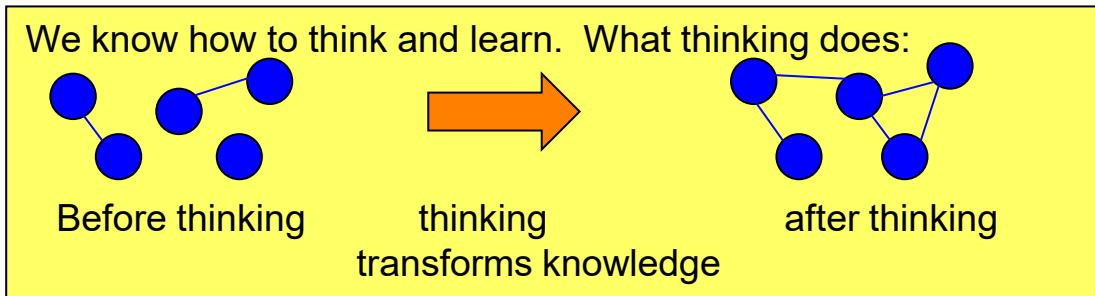
Variations in physical development across childhood, developmental motor skill problems, their causes and implications for exceptional learning.

Bloom's Taxonomy in the Psychomotor Domain Work: useful for planning psycho motor goals to learn a new set of actions for example to play golf, to go about fishing, to use a new tool or a new computer program

Level	
five	Naturalization: you use the behaviours skills automatically and without thinking about this .
four	Articulation: you can modify the action sequence to use it in novel ways to deal with types of challenges you haven't faced earlier or to deal with unanticipated situations. You learn to apply the new action in context of the quite different from where you learnt it.
three	Precision: you link the new behaviour with particular goals or purposes. You learn how to apply the action sequence all the skill in particular situations without being instructed; you control your activity
two	Manipulation: you reproduce a sequence of actions you've learned either by remembering or by being instructed. You don't have the model present modeling them.
one	Imitation: you imitate or copy the action you observe being done. You may need to have the action done on you so that your body can feel it. This helps you to learn to imitate it.

Knowing through our thinking

What we know about how to think and learn



Experiential knowledge	cultural knowledge	Procedural knowledge
Emotional knowledge	What we know about topic	Thinking knowledge
Abstract knowledge	identity as a learner	Attitudes and dispositions to topic

We know through our thinking and learning in two ways:

how we think or act on our ideas:
cognitive strategies

how we manage and direct our thinking activity:
metacognitive strategies

Thinking is a means to an end : evaluating what we know and possibly knowing more.
All thinking begins with what we know.

To understand thinking, we need to understand what, how and when we know.

Individuals think about a topic in two types of ways

Individuals use two types or ways of thinking (Pressley & Harris, 1990)

cognitive strategies :

how learners think about ideas, link, reorganize, transform or change ideas and learn.

These include using actions to

- infer a theme or topic,
- activate relevant existing knowledge,
- paraphrase and/or visualize,
- self-question and monitor as one learns and back-track if necessary
- categorize, generalize, look for shared properties
- compare and evaluate,
- summarize,
- question our ideas,
- think creatively and critically,
- think about possibilities and
- transfer and contextualize your knowledge

Metacognitive strategies :

Actions learners use to manage and direct how they use the cognitive strategies and manage their learning. We

- plan how we will learn something, decide when and why to use each cognitive strategy,
- monitor the ideas we are learning and fine-tune them,
- evaluate how well the learning is progressing,
- take further strategic action if necessary to change direction and
- reflect on what we learnt and what worked for them.

It is our awareness of how we learn and think and what are useful learning strategies to use.

It's our self regulation.

Link the ways of thinking with the other ways of knowing

- visualize or imagine new ideas in a context : *"What pictures can I make of this"*.
- draw pictures of what you are learning
- take episodes apart, note the images shared by two or more episodes that have the same idea and then build more general icons.
- act on mental pictures in logical ways.
- contextualize; visualize ideas in particular contexts.
- sequence ideas in visual, spatial or temporal properties.
- relate ideas by using analogy with other episodes.

Learning-thinking
contexts

- act out ideas you are learning, link actions with words and more abstract concepts.
- use their bodies to represent ideas.
- discuss the functional, action-values of ideas.

Thinking knowledge

topic

Abstract conceptual

Beliefs about one's self in relation to

Self efficacy re the topic

- analyse and debate the ideas.
- paraphrase or summarize ideas
- question the relationship.
- put the ideas in a story form.
- organize ideas around a topic, use the topic to predict particular ideas.
- look for and to impose order and consistency,
- make objective observations and interpretations.
- reason inductively and deductively.
- draw conclusions
- hypothesize and apply general rules to particular situations

Unpacking metacognitive knowledge

Metacognition : how students manage and regulate their thinking, learning and performance.

Self-regulation: monitor or self-check, plan or goal-set, and attend and rehearse. It includes;

- knowing that a particular action is a useful learning strategy,
- knowing how to use the action and
- knowing when and why to use it.

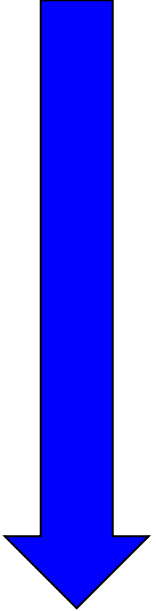
Metacognitive knowledge is the awareness that we have about how we learn. This includes

- awareness of cognition; what learners know about their knowledge, know that a particular strategy is useful.
- awareness about them as learners and factors that influence their learning, for example, how they remember.
- awareness of how to use strategies.
- conditional knowledge; knowing when and why to use particular strategies .
- knowledge of how to manage and control one's thinking and learning; this includes
 - plan for learning: decide and select relevant strategies, sequence strategies decide goals, purposes.
 - monitor progress through learning activities, seeing how close they are to their goal for learning
 - evaluate learning outcome, is it the intended goal or need to be modified further ?

How metacognitive thinking develops

- internalizing egocentric speech as inner language
- aware that knowledge and understanding are built and can be managed begins around 5-7 years old and develops into adolescence
- reflect on one's thinking; 6 year olds can reflect on their own thinking in familiar contexts.
-
- planning develops slowly and improves rapidly between 10 and 14 years of age.
- monitoring of learning develops slowly but is improved by teaching.

Children who integrate these areas of knowledge into a unified theory can use them beyond the context in which they were learnt.



Think aloud Students think aloud while doing a task. Record and analyze the think-aloud protocols and other data such as writing, drawing, video-tapes, or behavioral observations that show the cognitive processes.

Portfolios that include student outcomes :acquisition and retention of knowledge, application and comprehension of knowledge, creation of knowledge and perusal of knowledge

Problem-solving tasks : contextual problem solving tasks which are scored for fluency and flexibility.

Dynamic assessment procedures within particular domains; this allows the ability to measure the rate of learning transfer and rate of learning, particularly for far transfer.

Implications for teaching students about thinking

As part of my teaching I need to

scaffold explicitly the thinking strategies I want my students to use at any time

teach the separate ways of thinking explicitly as physical actions initially



make my students aware of how they are thinking at any time.

I will teach them to describe the thinking they are using.

teach them to use self-talk to guide their thinking and learning

Thinking strategies are learnt in domain specific ways

This teaching involves me working in the students' ZPD

Activities

Activity: A hierarchy of thinking strategies. Bloom's revised taxonomy of Educational Objectives as a set of cognitive strategies in Duchesne et. al:

- remember or recall knowledge verbatim: don't change the new knowledge much
- understand it some way,
- apply it,
- analyze it in various ways,
- evaluate it and
- create new ideas from it.



greater impact on the knowledge

Activity: Consistency in how we think and learn: the cognitive and learning styles approach. Duchesne et. al. Note the meaning of cognitive style (page 286).

the concept of perceptual style and field dependence versus independence. How individuals act on and interpret information.

field independent thinkers analyse information into its details and focus on these.

field dependent thinkers look for overall or main idea They are more likely to ignore detail.

the concept of conceptual tempo.

think more slowly and more reflectively about the information.

think impulsively; they make a quick guess about the situation and respond accordingly;

Which type of learner is more likely to be successful in the classroom? Who is more likely to be programmed by the teaching.

Note how the ways of thinking are influenced at least in part by the cultures to which we belong read the section on sociocultural factors and cognitive style beginning on page 227.

note the authors' review of the research relating to cognitive style and its implications for planning and developing teaching strategies in the classroom

Activities

How the discussion of deep and surface learning links the particular learning strategy used by a student with their motivation and the goal they want to achieve. Note the characteristics of the deep, the surface, and the achieving approaches.

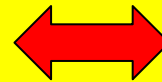
Every teaching and most real life situations assume that participants think in particular ways. From what you know about exceptional learners, what would their learning profile likely to be in terms of

- field dependence versus independence,
- impulsivity versus reflection and
- deep versus surface versus an achieving learning approach?

To what extent do the cultures to which these students belong teach them how to think in ways valued by the regular classroom?

Daniel Kahnemann (2011) proposed a contemporary version of the cognitive and thinking styles dichotomy: humans display basic modes of thinking in making decisions; fast versus slow thinking.

fast thinking is intuitive, rapid, automatic and emotional. It uses simple mental rules of thumb (heuristics) and thinking biases and leads to feelings and inclinations. The biases are how believable an outcome is, being over-optimistic and believing the likelihood of a present event matches their likelihood in the past.



slow thinking is rational, deliberate and systematic. It uses logical algorithms and reflective analysis and evaluation and leads to rational conclusions.

In the classroom, students need to make decisions all the time. These decisions underpin the behaviours they show and their learning outcomes. While most of us use both types of thinking to make decisions, some use one mode more. Most teaching assumes students use slow thinking.