

Knowing and learning

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What you know : the starting point for knowledge enhancement

A person's existing knowledge about any topic provides the starting point for learning. It provides the individual with a 'platform' for interpreting the teaching information at any time and for evaluating and using feedback they receive.

The term 'knowledge' here refers to all that an individual or a group (a community, etc.) knows about a topic, one's self and one's world. Any topic, subjects or domain of knowledge can be encoded in several forms. These forms or aspects of knowledge a student has at any time synthesize or combine to account for how the student understands or knows.

The aspects that comprise what an individual knows or understand about a topic at any time are shown in Figure 1.

More about the various aspects of knowing.

More about conceptual knowing. Each proposition links two or more concepts. This includes patterns trends, academic vocabulary, more general definitions of words, general rules, formulae, propositions, cause-effect relationships, abstract symbolism, images and gestures that are used in general ways. Concepts and propositions are defined by a culture, often through its language/s.

More about procedural knowing. Examples of knowing through actions and skills. When you read the words *padded*, *thrashed* and *pointed* in the extract above, you may have involuntarily 'done' them in your mind. As well, you can interpret gestures in general ways. Each subject and topic you teach includes characteristic action sequences that permit you to understand it. This is your procedural or action knowledge.

As well, we use actions to

- link ideas to form new knowledge (strategies and skills)
- try out our understanding an any time to see how well it fits and to receive feedback
- achieve outcomes, solve problems
- we show what we know.

Features of this aspect of knowledge include:

- These are both physical actions we do and actions we do in our heads (that is , thinking).
- The actions have two features; they are both embedded within a context and linked directly with other contextual elements and decontextualized.

More about attitudinal knowledge: Attitudes and dispositions are beliefs we have or think about an idea, a topic, a person, a thing or an event. Learners link values and feelings with a topic, for example, whether it interests them or is useful. Examples of attitudes students have about learning;

- History is interesting because it tells us about people lived.

^{1 1} Munro, J. (2007). A knowledge enhancement perspective on learning. This paper was contracted by OECD in July 2007 as part of the Alternative Models of Learning project for OECD Centre for Educational Research and Innovation.

Figure 1 : The multiple ways in which can we can understand /know a topic (Munro, 2005).

<p>Experiential , imagery knowledge</p> <ul style="list-style-type: none"> • Know in imagery, experiential ways and create ‘virtual imagery understanding. • our bank of stored experiences and a distillation of these (stereotypes or prototype images) • Ideas defined in specific situations or contexts (in time and place) that are personal, subjective and unique to individual. • images creating ‘virtual imagery understanding 	<p>Emotional knowledge</p> <ul style="list-style-type: none"> • Know through interest, engagement, emotion linked with the topic /domain • motivation to learn a topic, • their belief about whether they can learn it successfully, (their self efficacy, self confidence as learners and thinkers. 	<p>a knowledge of cultures</p> <ul style="list-style-type: none"> • know through one’s culture • know what /how the cultures to which one belongs values the topic and how individuals in the culture are permitted to operate in terms of the topic • Know the roles of individuals in the culture; classroom culture- what teachers and students do, expectations, key ways of operating for teachers and students in the classroom.
<p>Abstract conceptual knowledge</p> <ul style="list-style-type: none"> • Know conventionally, in abstract, ‘decontextualized’ ways that are culturally taught • These are concepts, rules conventions. These are usually culturally taught. • These allow the individual to talk about what they know in propositions in ‘decontextualized’ ways that refer to more general properties or features. • Literacy, numeracy use abstract symbolism • ideas linked in hierarchies (main ideas, subordinate ideas, details). • It also includes the personal, intuitive theories an individual creates about a topic. 	<p>what person knows about a topic</p>	
<p>Know through action sequences, procedures</p> <ul style="list-style-type: none"> • Know through action sequences, • know how to automatize action sequences, • know how to ‘do’ what you know. This includes both taught and self-created action sequences. 	<p>Know through one’s attitudes and dispositions to the topic</p> <ul style="list-style-type: none"> • how the topic is valued, useful • how prepared we are to learn the topic, the positive or negative dispositions 	<p>knowing how to think and learn This includes two types of thinking: about the domain and how to manage/direct one’s thinking and learning about the topic:</p> <p>how we think about and learn new ideas; <i>cognitive strategies</i>. We</p> <ul style="list-style-type: none"> • link and form ideas by paraphrasing and/or visualizing. • categorize, look for shared properties, • generalize, summarize, • compare and evaluate, • question our ideas, • think creatively and critically, think about possibilities and • transfer and contextualize our knowledge. <p>actions we use to manage and direct how we use the cognitive strategies; our metacognitive knowledge. We</p> <ul style="list-style-type: none"> • plan how we will learn something, when and why to use each cognitive strategy, • monitor our learning and fine-tune it, • evaluate how effectively the learning is progressing, • take further strategic action if necessary to change direction • reflect on what we learnt and what worked for them. <p>knowing one’s self as a learner of the topic and social identity we form an identity or knowledge of</p> <ul style="list-style-type: none"> • ourselves as learners, both in relation to what we are learning, • the extent to which we see the topic as part of us and defining us. We position ourselves in relation to others as a learner in their classes.

- Assignments are a waste of time; I never get them finished.
- English is a bludge; it's just about how you talk

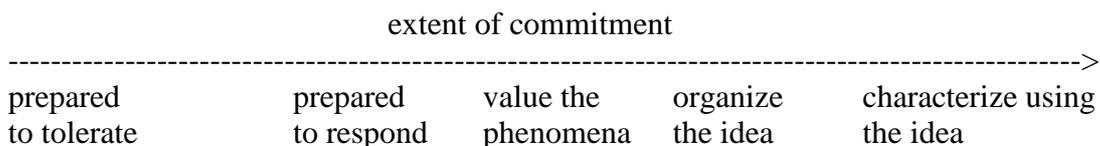
We can also have attitudes towards ourselves as learners;

- I will never be able to learn mathematics because I don't understand algebra.
- I don't need to study hard in English because everyone passes it.

What are attitudinal behaviours ? Krathwohl, Bloom and Masia (1964) provide a systematic way of describing attitudes to ideas:

taxonomy of attitudes	attitudinal behaviours
are prepared to receive it or to attend to it	they give time to listen to/ see the idea but are not prepared to pursue it, to seek it out for themselves.
are prepared to respond or to respond actively to the idea, doing something with or about the idea.	they are prepared to interact with the idea, to pursue it but will not seek it out.
value the idea; see it as having some worth.	They show they value an idea, pursue it and seek it out independently and willingly, value it more than other ideas.
relate the idea to one's life; it is so valuable that it is related within the person's overall value system.	they show they relate the phenomena to their life and value it more than for other ideas
characterize the idea; use the idea to organize their values and to form their 'world view'.	they form a consistent world view around the idea and live their life through it.

The five stages can be seen as lying on a dimension of personal commitment to the idea;



Each stage indicates a different level of commitment to an idea and a greater internalization of behaviour. Where students are in their attitudes towards a phenomenon or idea is indicated by how far along the dimension they are, as shown in their behaviours.

More about emotional and motivational knowledge. Students are motivated learn particular topics, know whether they can learn them successfully (their self efficacy; Nichols & Utesch,1998) and have self confidence as learners and thinkers. This is their knowledge of when to learn; motivational knowledge, self-efficacy (Bandura)

More about cultural aspects of knowing. Students know (or believe they know) how the cultures to which they belong think about a topic. Cultures include their family, peer groups, student and work, ethnicity and other communities in which they live. Cultures differ in how they value a topic, the aspects they value/prioritize, etc. They learn from their cultures what knowledge is valued and useful to learn and how to learn it.

Evidence for the multiple ways of knowing

Evidence for the multiple ways of making sense of an idea come from several perspectives;

- theories of general ability,
- theories of cognitive style and learning style,
- theories of how we code information and
- theories of memory.

While these theories use different terms, they are frequently looking at these ways of knowing.

Your understanding or interpretation at any time : Your thinking space. Your understanding or interpretation of any information is the ‘sum total’ of what the various aspects tell you; the synthesis of the aspects that are in your consciousness or awareness at that time. The synthesis happens in your **thinking space** or short term working memory (STWM).

Conceptual aspects : the vocabulary / facts/propositions/ relationships/symbolism	Identity as a knower aspects : your identity as an knower of the topic	Attitudinal aspects : the attitudes you have to the topic
Experiential aspects: the experiences, imagery you know about the topic	Your understanding of the topic	Emotional aspects : The feelings, motivation you link with the topic
Procedural aspects: the action sequences you know that are part of the topic	Cultural aspects : How the cultures to which you belong value /prioritise the topic?	Thinking aspects : how you think about/learn this topic

The thinking space is where new learning or linking between ideas occurs. It has limited capacity; it can handle a limited amount of knowledge at a time. You can think about more knowledge at a time if the knowledge is automatized. Ideas that are not automatized take up more thinking space and you are less able to make new links in this case.

Apply the knowledge framework to your teaching

1. Any teaching needs to make assumptions about how students learn and favors some aspects of learning. Successful learning is more likely when there is a match between the learning demands made by the teaching and a student’s learning preferences. What demands does your teaching make about each aspect? What will you assume your students know about any topic you teach?

Conceptual aspects : <i>What concepts /facts/ relationships about the topic will you assume the students know ?</i>	Identity as a knower aspects : <i>How do you expect the student to identify as an knower of the topic ?</i>	Attitudinal aspects : <i>What attitudes will you assume students have to the topic ?</i>
Experiential aspects: <i>What experiential knowledge/imagery about the topic will you assume the students know ?</i>	Topic :	Emotional aspects : <i>What feelings do you expect students to link with the topic ?</i>
Procedural aspects: <i>What procedures /action sequences re the topic will your assume the students know ?</i>	Cultural identity aspects : <i>How do the different cultures to which you belong value /prioritize the topic ?</i>	Thinking aspects : <i>What ways of thinking /learning do your assume students will use to learn this topic ?</i>

2. Use the framework to identify what you want students to know having learnt the topic.

Conceptual aspects : <i>What concepts /facts/ relationships about the topic will the students know ?</i>	Identity as a knower aspects : <i>What self identity as an knower of the topic will students have ?</i>	Attitudinal aspects : <i>What attitudes will students have to the topic ?</i>
Experiential aspects: <i>What experiential knowledge/imagery about the topic will students have ?</i>	Topic you describe /teach to the group	Emotional aspects : <i>What feelings do you want students to link with the topic ?</i>
Procedural aspects: <i>What procedures /action sequences re the topic will students learn ?</i>	Cultural identity aspects : <i>How do the different cultures to which your students belong value /prioritize the topic ?</i>	Thinking aspects : <i>What ways of thinking about this topic wills students learn ?</i>

3. How do you balance and integrate the aspects ? While you can have all aspects of knowledge, some may be better developed. Imbalances can influence how a student learns.

4. How does the framework assist with taking account of learning styles? The aspects explain patterns in a person’s learning profile. Some students have largely experiential knowledge about a topic while others largely abstract conceptual knowledge.

5. How could the framework assist you to engage students in learning the topic ? Students may

have a negative identity as a knower or link negative emotion with a topic/subject.