### <sup>1</sup>Using language to learn

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Language influences learning and the knowledge we build in several essential ways, for example,

- It defines our knowledge or at least major aspects of it. It allows us to define the key concepts or building blocks of a topic in ways that allow us to share and enhance what we know. We build relationships and principles between the key concepts using language.
- It guides the learning or knowledge change process. Whenever we work through unusual tasks or need to learn how to do something that is novel, for example, to use a new mobile phone we hear ourselves telling us what to do. In short, we use our self talk to guide our learning. The use of language in this way is 'metacognition'. Imagine you have travelled to Australia and need to access an ATM or watch an 'Australian rules' football match. You might hear yourself saying Why did that happen ? What's going on here ? Will they / it ... ? Parts of this self talk involve us trying to link what we already know with the new situation and trying to direct, manage, review our learning.

The focus of my discussion is on this second way of using language to learn. Successful academic learning involves learners implementing a number of key learning interactions that guide the knowledge change. Language is the main means by which they do this. They

- manage and direct the change
- describe aspects of their knowledge
- transform what they know

To examine role of language in knowledge change we need a systematic approach to enhancing one's knowledge of a topic. To illustrate how language can facilitate the use of the learning actions to enhance knowledge, I will use a context in which I was recently involved. My task was to teach a year 3 class how fish breathe.

Key learning functions include

- having an explicit purpose or reason for learning,
- knowing the outcome or goal of the learning
- using aspects of one's relevant knowledge
- identifying a pathway to the learning outcomes
- changing what one knows in a particular contexts
- abstracting, clarifying, decontextualising the ideas learnt
- responding emotionally to the ideas learnt, investing positive emotion in the ideas
- learning, identifying the strategies used to learn successfully
- seeing learning progress being made
- encoding the new knowledge in long term memory, integrating it with what is known,
- practising recalling and applying it in a range of situations,

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- automatising it and
- practising organising the knowledge for display in assessment contexts.

*Learning interactions are what learners do to learn.* The set of interactions or learning functions include the following:

#### 1. A purpose for learning

The first interaction relates to learners framing up a purpose or reason for learning a topic. They are 'challenged' to learn, are in a state of 'cognitive conflict'. This can range from a largely emotional drive to satisfy one's interest or curiosity to an explicit challenge or question to be answered.

Teachers frequently need to assist students to frame up goals, for example, learning how to add two fractions.

*The fishy activity* Look at these two situations.

Here is the Darebin Creek. It has fish
swimming around. They are healthy and
well. Sometimes people catch some of
the fish at take them home for dinner.

Here is the Darebin Creek. It has very few fish. They are sick and dying because they can't breathe. swimming around.

You need to do something to help the fish to survive. You need to help them breathe better. How will you can make the creek better for them ?

*Learning dialogue* : to describe / formulate the challenge. It involves being able to ask questions at various levels of complexity about the topic:

Why did that happen? What is going on here? What could it be? What does each part mean?

Teachers need to model / demonstrate and foster the dialogue, show they value it.

### 2. The outcomes of the learning

The second interaction involves the learner forming an impression of the outcome of the learning, They visualize the desired outcomes of the learning. They form an impression of where they will end up, what they will know, be able to do or what they may believe or feel. They 'see' the goals as personal experiences (Locke & Latham, 1990; Pintrich & Garcia, 1991). This gives them a direction or focus of their learning.

Teaching often doesn't encourage students to do this. Instead, it operates by giving them 2 or 3 pieces of jigsaw at a time but not letting them see what the outcome will be like. The students can understand each piece but aren't given the opportunity to see how the bits will fit together, what the overall outcome will be like. This forces them to be dependent on the teacher, limits their self management and control and leads to beliefs about helplessness in learning.

*The fishy activity* Students imagined the outcomes of learning how fish breathe. They can imagine what their finished project will look like. What will they say in it ? What might they know when they have learnt this topic?

*Learning dialogue* : to speculate about and describe possible learning outcomes, to describe learning outcomes in student terms:

- I need to think about what I will end up knowing.
- Why will I be able to say / do / know when I have learnt this ?
- What will the outcome look like ?

### 3. What learners know about the topic

Learners make links with and use what they know about the topic. Knowledge change begins with what students know that is relevant. This interaction involves are several aspects.

- 3.1 One aspect is what they know about the topic. Students can have their knowledge of a topic stored in a number of ways;
  - in abstract, verbal ways
  - in imagery ways as experiences and
  - in action ways.

A plethora of studies have examined the multiple ways in which learners can know a topic (learning styles, for example, Riding & Cheema, 1991; multiple intelligences, for example, Gardner, 1995, 1999; dual coding theory, for example Paivio, 1991).

The fishy activity To stimulate students' existing knowledge about how fish breathe

- Visualise existing knowledge. What do you do when you breathe ? Imagine you have been shrunk and you are travelling in a bubble of air your friend has breathed in. Where would you go ? What would you see ? Where does it stop ? In small groups students compiled a picture showing where the air goes ?
- Existing knowledge in words. In a 'think-pair-share activity, students listed the words they thought of when talking about how they breathe (such as throat, lungs, blood, every part of the body).
- Existing knowledge in actions. What actions do you do when you breathe ? What happens when you run fast ? They reviewed how their breathing changed when they engaged in exercise. Practise breathing ? Breathe fast/ slowly. They did and described the breathing action.
- Review : mouth –throat-lungs –blood –all parts of body
- They imagined how their pets breathed and thought about the question : Do all living animals need air to stay alive ?
- How do fish breathe ? Imagine a fish swimming in water ? How does it breathe ?

What things might make it hard for you to breathe?

*Learning dialogue* : Language is used to activate existing knowledge of the topic in its various forms:

- When I hear / see these ideas, what pictures come to my mind? What words do I think of? What would I do? What are the key actions? When did I last hear / see the ideas? What was the situation / context? What happened? The dialogue here stimulates relevant existing knowledge in its various forms.
- How can I put the pictures into words /words into pictures ? do the words? The dialogue here involves recoding the ideas.
- What can I write / draw / say about what I know in different ways ? The dialogue here involves unloading (down loading the ideas).

Learning dialogue here is critical when learning in an international context.

3.2 A second aspect relates to what they know about how to learn it, how to think through the topic. Again, many studies have examined what students know about how to transform their knowledge (spectrum of approaches to learning, for example, Biggs, 1987; Davidson & Sternberg, 1998; Jausovec, 1994).

*The fishy activity* For our fish breathing activity, the students said how they would go about learning a topic, what they would do, and how they would direct and focus their learning activity. If students say what they will do before they do it, they are more likely to do it.

*Learning dialogue* : To say how they learnt related earlier topics, the learning actions they used. When I learnt about 'caring for animals' I

- Made a picture in my mind of what my pets need us to do
- Said the things we needed to do
- I heard what other people said. This helped me.
- I read some books about how people took care of different pets.
- 3.3 A third aspect relates to what they believe about themselves as learners of the ideas, how they value the ideas, whether they believe they can learn the topic successfully (their self-efficacy, for example, Nichols & Utesch, 1998; Pajares, 1996). Learners' self efficacy judgments have an important influence on how they go about learning, the effort they invest in learning and the learning strategies they use. They make these judgments quickly and unconsciously and independently of their actual level of ability.

It is critical that teachers optimize students' self efficacy judgments before they begin to learn a topic. Teachers can do this by having students identify explicitly what they know about the topic, that what they know is valuable, that they are already 'on the way' and that they know how to learn the topic. *The fishy activity* For the fish breathing activity, the group saw that it had a good deal of knowledge about how other animals breathed. They also saw that they knew what to do to learn about fish and breathing.

*Learning dialogue* : Students tell themselves they can learn it, based on their earlier learning success. "I think I can learn this because ...."

3.4 A fourth aspect relates to students identifying what they don't know about the topic. They identify their unanswered questions about the topic.

*The fishy activity* For fish breathing, students brain-stormed the topic in small groups and noted some questions they weren't sure of about how fish breathe. What will you do to learn more about how fish breathe ?

*Learning dialogue* : What questions can't I answer about how fish breathe ? I don't know if fish can breathe when they are out of water.

### 4. *A pathway to the goal*

Learners build or "see" a possible pathway to their goal. Students who can do this are more likely to maintain engagement and perseverance. While the pathway that learners will follow may change its direction during the learning activity, at any time it assists in orienting the learning.

Learners need to have the experience of planning and developing their pathways through a topic. Often they can learn it best by identifying the learning pathway they have followed over the previous few weeks.

More generally, students who see learning a topic as being on a journey through the topic

The fishy activity For fish breathing, the students discussed the following questions

- What will you need to do to finish your project ?
- What extra things do you need to learn ? What questions might you need to answer ?

*Learning dialogue* : What paths will I follow ? What things will I do ?

### 5. Learn in specific contexts

Learners learn the new ideas in specific contexts in limited, 'scaffolded' ways by linking what they know into new ideas.

*The fishy activity* The students examined specific instances of fish breathing:

- watched videos of fish swimming. Do the fish come to the surface to gulp in air? What do they do as they swim? What would happen if they tried to breathe through their nose? Where is the air you will breathe in a minute? Where is the air that fish breathe? How do they get it out of the water?
- inspected dead fish; identify the gills and the fins.

• imitated how fish move as they swim.

Students investigated each scenario and made new links between ideas they already know. They do this in different ways.

5.1 *Working on the teaching information* One aspect involved how they work on the teaching information, what they look for. This determines what they learn about each episode. Some students

- look for detail in the information, look for links between them and learn these; they make small, sequential links between ideas.
- look at the overall ideas and make larger, global wholistic links.

Detailed focused strategies global focused strategies Work on bits of information Look for overall patterns, scan, Learn step by step, delay giving answer Leap in and answer quickly, guess impulsively Focus on detail and specific facts Focus on overall idea, miss or ignore detail Think in one direction provided by teacher Think by moving in several directions at once Take things apart, work on the parts Think in wholes; don't take things apart Follow other people's directions well Prefer to direct, manage their learning, flexible in their thinking, unanswered questions. Prefer flexible, open-ended learning contexts Prefer less flexible convergent learning Learn other's explanations, procedures Prefer to work out own explanations Analyse, sequence ideas in learnt ways Arrange, sequence ideas less predictably. Reflect about an idea often for a long time More likely to 'guesstimate'

This distinction is important in teaching. It is shown in the following:

*Learning dialogue* : tell yourself to look at the topic / teaching information in both analytic and global ways:

- What are the parts in the information ? Does it tell you what happened first, second, third ?
- What is the overall idea ?

**5.2** Linking the new ideas in different formats. Some students may link the new ideas in time and space in specific contexts; they form images episodes or experiences of new ideas while others link ideas in more verbal, less contextualised ways. They form relationships between ideas in familiar language. Others link them in action sequences.

*Learning dialogue* : Look at these examples of fish breathing. Act on the images / pictures / specific episodes. What do they all show ? What do they all share / have that is the same ? What is a useful icon / mental image for what fish use to breathe.

- What actions do these fish use to breathe ? Mimic the actions.
- Describe in words in different ways how these fish breathe.
- Talk about the scientific aspects of how fish breathe.

Other aspects of learning in specific contexts also have their own learning dialogue. These include

- thinking intuitively about the ideas, explore and trial particular components and then use context-evaluative thinking.
- asking questions that bridge from existing to new ideas *How can we get from..to ...*? These question sequences allow them to move gradually from what they know.
- recoding imagery, action knowledge of new ideas into words.
- practising new ideas.

## 5. Abstract or deepen the new understanding.

Learners deepen their new understanding. They abstract or "decontextualize" it, and link it more broadly with what they know.

*The fishy activity* For fish breathing, the students generalised what they had learnt about how individual fish breathe. They

- linked episodic, verbal and action aspects of how fish breathe ; said, wrote, drew, did 'fish breathing.
- examined whether all fish breathe in the same way and how fish that don't have gills breathe, categorised fish on the basis of how they breathe, selected the main ideas.

ways of breathing lungs (us) gills (fish)

- elaborate and extend their understanding through questioning, for example,
  - "When would it be hard for fish to breathe ?"
  - "Would fish be able to breathe better swimming closer to the bottom of a river or sea, near where the plants grow, or closer to the surface because the air rises ? Would you catch fish better if your line was just below the surface of the water ?
- learn the conventional ways of communicating new ideas. They reviewed the key words such as gills, fins, dissolve, blood.

# Learning dialogue: students

- tell themselves to link episodic, verbal and action aspects of idea at once; they say, write, draw, do.
- review, consolidate what they have learnt with what they knew
- decontextualize, summarize, re-organize, re-prioritize, main/subordinate ideas.
- elaborate and extend ideas through questioning.
- teach the conventional ways of communicating new ideas identify a range of contexts in which they can use it.

### 6. **Invest positive emotion in the new knowledge**

Learners need to invest positive emotion in the new knowledge they have learnt. This increases the likelihood they will

- be self-motivated to think about it and use it on later occasions,
- believe they can learn the ideas successfully and
- believe that it is OK to take risks.

*The fishy activity* For fish breathing, the students commented on the value of what they knew now and discussed how they could use the new ideas. They also decided that it was their knowledge, that they did the learning, they could make work for them. They saw that it was them who did the learning and that the new knowledge was in their heads.

Learning dialogue: students learn to comment

- how interesting, valuable, useful the new ideas are,
- that is was their mental activity that learned the ideas and
- that they managed and directed aspects of the learning.

## 7. Store what they have learnt in memory

Learners store what they have learnt in memory and practise remembering it (Baddeley, 1990). They say briefly what they have learnt, link it with what they know, build memory "icons" for it and practise recalling it.

Storing what has been learnt in memory and practising to recall it is a critical aspect of knowledge management and enhancement.

Learning dialogue: In terms of learning about fish breathing, students can

- Say as briefly as they can what they have learnt about how fish breathe
- Describe how it is similar to /different from what they knew about how animals breathe ?
- Picture in their minds a fish breathing
- Imagine themselves remembering the ideas.
- Draw an icon of the main ideas to remind themselves.

### 8. **Identify how they learnt**

Learners identify how they learnt, what they did that helped them to learn. This includes both the learning strategies they used and the metacognitive control they exerted over the learning. They reflect on and review the actions they used to learn.

This allows students to build up, in an explicit way, their knowledge of how they learn and the learning strategies they can use. They can compile a list of 'What I can do to learn'. They also learn the language for talking about what they do when they learn.

*The fishy activity* For learning how fish breathe, students examine the question What things did you do to help you learn about how fish breathe ?

- Making links between ideas.
- Making pictures in my mind.
- Thinking of differences between us and fish.

This interaction is important if students are to learn to be autonomous learners, to learn to manage and direct their own learning and to be 'life long learners'.

*Learning dialogue*: students learn to talk about the thinking and learning actions that helped them learn the ideas. What did I do to learn these ideas ? What worked for me ? Saying what they did to learn gives the thinking actions a permanence and concreteness.

### 9. Making progress as a learner

Learners see themselves making progress. There is a range of ways in which students can learn to do this. They can decide what are reasonable signs or indicators that they are learning more about a topic and are making progress. They can use their indicators of learning to map and to monitor their progress.

*The fishy activity* In relation to fish breathing, the students can examine What questions they can answer now that they couldn't answer earlier? What they know / understand that they didn't know /understand earlier?

The students decided that they needed to understand first how they breathed and then how particular fish breathed. It was acceptable for them to understand how particular fish breathed initially and then gradually extended this.

*Learning dialogue*: students learn to talk about their learning progress.

### 9. Automatise what they have learnt

Learners automatise aspects of what they have learnt so it can be used for further learning. They do this by automatizing links between ideas and organizing what they know into larger "chunks".

*The fishy activity* The students worked on linking fish breathing with 'getting air out of water' and 'using gills instead of lungs'. They drew these links as follows;



The aim here is that one of the ideas, for example, 'fish breathing' stimulates the related or linked ideas.

*Learning dialogue*: students talk about how they will link ideas in a string, do / know some things automatically, put their new knowledge into larger chunks.

### 10. **Transfer and generalise the knowledge**

They transfer and generalise the new knowledge. They explore and analyse the new understanding from a range of perspectives.

## The fishy activity In terms of the fish breathing, the students

- explored and analysed the new understanding from a range of perspectives, for example,
  - Would the gills in all fish have the same shape ?
  - Do bigger fish have more gills ?
- transferred the ideas (near and far transfer). Would a fresh water fish be able to breathe as well if it
  - swam into deeper water ?
  - swam into warmer water ?
  - swam into sea water ?
- What fish might be more likely to survive in 100 years ?
- categorised problem solving contexts in terms of whether the ideas are useful
  - Why is it harder for fish to breathe in muddy water ?
  - How would dangerous chemicals in the water affect how well fish breathe ?
- used the knowledge in open-ended creative problem solving: They were asked to work in pairs or groups of three and were given the challenge : *You are member of committee advising the Darebin Council about what steps to take to stop the fish from dying in the Darebin Creek. What would you suggest the council do ?* The groups, over ten minutes, came up with a number of possibilities :
  - Pump air into the creek; this group drew a picture of pumps pumping air into the creek at various points.
  - Put air into water under pressure and put it in river
  - Keep water cool; have water coolers; this group drew a picture of the creek flowing past big coolers.
  - Make the creek salt water and put in sea fish; this group thought of converting the freshwater creek to sea water.
  - Grow plants in the water
  - Breed special fish that need less air to live
  - Give fish places where they can be safe from fishermen
  - Make 'air spaces', 'air bubbles' in the water
  - Put pipes into the water that allow air to get into it
  - Slow release air tablets.

The students valued hearing about the ideas that other groups had. Each group then agreed to draw a poster showing their suggestion.

• created new episodes for the ideas. In the future the world may need fish to grow faster. Imagine what fish that grew faster would look like.

Learning dialogue: students tell themselves to

- explore, talk about and analyse the new understanding from a range of perspectives, for example, use Bloom's levels of questioning, de Bono's Six Thinking Hats, Taylor's Multiple Talents Model
- transfer the ideas (near and far transfer)
- use the knowledge in open-ended creative problem solving.
- create new episodes for the ideas.
- categorise problem solving contexts in terms of whether the ideas are useful
- answer higher-level Bloom-type question sequence
- look at ideas from various angles,
- suggest questions the new ideas answer.

## 12 Organise what they have learnt for assessment

They organise what they have learnt for assessment purposes. They reflect on the context in which they need to display and apply the knowledge, how they can align the knowledge with various assessment contexts.

This interaction is the 'flip –side' of assessment. Rather than focusing on procedures for what students know, it examines how students can learn how to show best what they know. It encourages students to reflect on how they will show what they know and how they can 'read' assessment situations'.

More generally it focuses on how students can learn how they can use their knowledge.

Teachers can implement a range of activities for students to learn this interaction, for example

- Having learnt a topic and needing to show what they know, students can practise identifying what they think they need to do to convince their teacher that they have learnt it, allowing students alternative ways to do this
- Having students in small groups make up 'mock tests' for a topic. Each group of students reviews the content and invents easy and difficult questions for another group.
- Having students attempt to link questions with a topic on which they will be tested. When they are working through the test situation, they can see how much easier it is to link questions in their mind with questions on the test paper.

The fishy activity For fish breathing, the students showed their understanding by

- Working in small groups to design and write a poster that showed what they judged to be important to say about how fish breathe.
- Talking individually to the class about one aspect of their group poster; each student selected one aspect and made a class presentation for about 1 minute.
- Working in small groups to make up a quiz of 5 questions for another group, who assembled and wrote their answers to the test.

• Working individually to select what they judged to be 10 important questions about how fish breathe. Each student wrote a list of the questions and their answer to each.

### Learning dialogue: students tell themselves to

- Imagine the assessment task formats and how they will link their knowledge with these.
- Practise matching possible assessment tasks with what they know.
- Thinking of ways of showing best what they do know, making the assessment 'work for them'.

### Some issues about how self talk operates

There are a few points I would like to make about how the set of interactions operates.

*The interactions are not a one-directional sequence* First, the set of interactions do not operate in a linear one-directional sequence. They can be categorised into three clusters: those to do with

- orienting one's knowledge (that is, 'getting it ready') for learning;
- changing one's knowledge and
- consolidating and transferring the knowledge change.

This is important from an international educational context; not all cultures learn in the comparatively strict linear way that Western cultures do.

Within each cluster, two interactions may operate in a reciprocal way at any time. For example, to deal with the ATM problem, the more you bring your existing knowledge to bear on it, the more you can focus your challenge, the questions you will attempt to answer.

As well, two or more interactions in a cluster can operate simultaneously.

This sequence of interactions matches aspects of metacognitive knowledge.

*The set of interactions are generic.* Second, the set of interactions are generic. They are not based in particular topics or subject areas. One of their values is that they can be applied to what one knows at any time to change what one knows. Imagine watching a three year old learning about a new toy. The infant will show evidence of putting in place each interaction. Even though the 3-yearold may not explicitly vocalize the challenge, we can see it in the child's intent –oriented behaviour. Think of any of us venturing onto the Internet tonight to learn more about self efficacy. We will do the same.

What changes during children's development is how they learn to use each interaction. Each interaction involves a range of reasoning and cognitive strategies. As we learn to use these more efficiently, our knowledge changes and so does our ways of thinking about it. We know from the work of Vygotsky that much of what individuals learn begins as knowledge in one's culture for solving problems and communicating.

*Each learning interaction is a thinking strategy* Third, each learning interaction is a strategy that individuals can use to modify or enhance their knowledge. They help us see how we can improve or enhance knowledge, what we can do. how to convert efficiently information to knowledge, particularly in problem solving contexts and then enhance it. They provide an explicit, systematic

framework for transforming knowledge. Much of the current discussion about knowledge management and enhancement is rhetoric; it is not operational. The interactions allow us to operationalise knowledge management and enhancement.

*The sequence can become useful 'self talk'.* Fourth, the sequence can be used to can be used the to teach students how to learn explicitly, to guide their thinking, learn relevant 'self talk'. They help students learn to be self managing and self directing learners. A key concept in contemporary learning theory is self-regulated learning and self-directing learners (Boekarets, 1997). This competence is managed through 'self talk' or 'inner language'. Learners acquire 'self scripts' that they use to manage and direct the range of activities necessary for effective learning, that is, by improve their metacognitive knowledge. Components of self-regulation include motivation to achieve and students' goal orientation (Pintrich & Garcia, 1991). The capacity to learn this competence is influenced by students' ability to reflect, personal goal setting and academic attainment (Zimmerman & Schunk, 1998).

The interactions actually tell the students what they tell themselves to do when they are using on task attention strategies. Below is a possible set of self scripts these students could learn to use to direct their attention.

- What question do I need to answer here ?
- What will I end up with ? How will I know when I have finished ? What will I have ?
- What do I know about this topic ? What pictures come to my mind ? What words do I think of ?
- How will I say what I have learnt? What did I do to learn other things like this?
- What do I know now that I didn't know earlier ?
- Whose brain did the learning for this ?
- What things helped me to learn ?
- What things helped me learn this ?
- What progress have I made ?
- How are new ideas like what I already knew? How are they different?
- Where else could I use these ideas ?

In other words, the set of learning functions can be learnt as a set of self scripts that students use to guide their learning in any context. The self scripts can catalyse learning or 'trigger' each interaction. They can also lead to learning becoming a conversation that learners have with other learners, the teacher, or 'themselves', that is, 'reflection during learning'. Given that a major way in which learners learn in conventional classrooms is by 'doing tasks', there may be a need in the future to help students learn effective self scripts for having conversations about and with the tasks they are doing.

A long term aim of the teaching can be that students learn to use the sequence spontaneously and selectively as part of their self talk whenever they need to work through a learning task. Teachers can remind them to talk about what they do when they use each strategy, to evaluate their usefulness and decide when to use them. Students can write the strategies on small cards and use these to self cue. The practice students gain in using the self scripts can be broadened to improve self-control more generally.

So far the focus has been on teachers implementing teaching that encourages and fosters each of the interactions. It is also possible for students to learn to use them explicitly, to guide their learning and thinking activity when, for example, they engage in on-line multi-media learning.

The set of interactions can be implemented in conventional learning at a number of levels simultaneously. As well as individual students learning by implementing them, each student can be contributing to the knowledge of a small group and each group contributing to the knowledge of a class.

*Self talk in international education* The self talk framework has relevance for international education and learning cross culturally. Students from different cultures may interpret / use the same terms differently and may use different terms for the same concepts. Telling themselves to imagine the ideas in context and discuss the different 'shades of meaning' from different cultural perspectives is important. Actions for concepts such as 'reliability', 'civilization', 'democracy' provide a means for negotiating meaning.

The feedback language teachers use to help students question what they know, to help students see what they do know, what they have in place, varies between cultures.

Students from different cultures differ in the ways in which they question what they know, their preparedness to engage in this questioning (the extent to which their culture has taught them to value self questioning of knowledge).

Cultures differ in the extent to which they use language to display what they know. Some cultures encourage knowledge display only when it is necessary to solve problems rather than to display the knowledge for the sake of displaying it.

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