Australian Capital Territory
EDUCATION AND TRAINING

PEDAGOGY

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Embedding Learning Technologies
Module 1

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Module 1.0 Pedagogy

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1.0 PEDAGOGY

Rationale

What is pedagogy?

Although pedagogy is sometimes seen as a nebulous concept, it is essentially a combination of knowledge and skills required for effective teaching. The more traditional definitions describe pedagogy as either the science/theory or art/practice of teaching that makes a difference in the intellectual and social development of students.

More specifically, new research is defining pedagogy as "a highly complex blend of theoretical understanding and practical skill" (Lovat, ACDE, p.11 2003). This research is highlighting the vast complexity of teachers' work and specifying just what the nature of that work truly is. As Lovat further emphasises: a teacher is "a highly developed autonomous professional, with a requisite professional knowledge base and practitioner skills which could stand alongside the equivalent in medicine, law and engineering" (ACDE, p.11).

Different research and theories may underpin different models of pedagogy but it is the contention of Freebody and Luke that within a certain range of procedures, differing teaching approaches work differentially with different communities of students; and effective teachers know that" (A Map of Possible Practices, Luke & Freebody, June, 1999).

Effective teachers "have a rich understanding of the subjects they teach and appreciate how knowledge in their subject is created, organised, linked to other disciplines and applied to real-world settings. While faithfully representing the collective wisdom of our culture and upholding the value of disciplinary knowledge, they also develop the critical and analytical capacities of their students" (NBPTS 1999, 3-4 in Lovat, ACDE p12).

In other words, good pedagogy requires a broad repertoire of strategies and sustained attention to what produces student learning in a specific content domain, with a given

group of students and a particular teacher. Teachers need to rely on quality educational research for different pedagogical models and strategies; at the same time they have to practise the art and science of teaching themselves, refining it as they go according to their own needs and resources and particularly those of their students.

Fortunately, research has dispelled two myths about teaching: (Shulman in Lovat, p12) These two myths are that:

1. Good teaching follows naturally from subject mastery
2. A good teacher can teach anything at all.

Thus, accomplished teaching "emanates neither from sheer knowledge of a subject nor from sheer teaching craft…." The notions of 'authentic pedagogy' (Newmann, 1996), 'quality pedagogy' (Hammond, 1997) and 'productive pedagogies' (QSRLS 1999) have all arisen in the last few years out of the need to identify that essential blend of knowledge and skills required for effective teaching.

Within such a context, this module on pedagogy provides a brief overview of various pedagogical frameworks and strategies to give teachers a reference point for the succeeding modules on the integration of ICT into classroom practice.

Part A: Pedagogical Models

Productive Pedagogies

Productive Pedagogies developed as a research tool for classroom observations during the Queensland School Reform Longitudinal Study (QSRLS) 2001. It is a theoretical framework that teachers can use to reflect critically upon their current classroom practice; that is, a vehicle to use as a professional 'vocabulary' (or parlance) around which to have conversations about teaching practice with colleagues and to focus on individual student needs. There are twenty elements of Productive Pedagogies that can be usefully grouped under four dimensions of classroom practice which are potentially necessary conditions for improved and more equitable student outcomes. The four dimensions are unpacked in table 1 below.

- High degrees of intellectual quality
- High levels of demonstrable relevance or connectedness
- Highly supportive classroom environments
- Strong recognition of difference

Table 1 The four dimensions of Productive Pedagogies

Intellectual Quality	Relevance / connectedness	Supportive environment	Recognition of difference
Higher order thinking	Knowledge integration	Student direction	Cultural knowledge
Deep knowledge	Background knowledge	Social support	Inclusivity
Deep understanding	Problem-based Curriculum	Academic engagement	Group identities
Substantive conversation	Connectedness beyond classroom	Explicit criteria	Active citizenship
Problematic knowledge		Student self-evaluation	Narrative

The following pedagogical frameworks and strategies have been summarised to give a brief outline of their essential features and their capacity to meet these four dimensions. To this end, a table has been devised to unpack the essential features of some planning frameworks and teaching strategies to hopefully give teachers a clearer picture of how they address against the Productive Pedagogies' four dimensions of classroom practice.

Primary and Middle School Inquiry Based Model

This planning framework is inquiry based, which reflects the belief that "active involvement on the part of students in constructing their knowledge is essential to effective

teaching and learning" (Murdoch, p.5). Inquiry is a framework for developing understandings about the world and has become a powerful tool in the contemporary classroom (See Murdoch: p.4). Outcomes based curriculum documents continue to advocate the process of inquiry as a vehicle for achieving effective learning in areas such as science, health and social and environmental education. As a means of meeting the four productive pedagogies dimensions of classroom practice, this model would appear to be an effective planning framework to cater for students' different learning styles and for engaging them in cognitively challenging and relevant curriculum.

Within this framework, **units of work are integrated across curricula** and based around topics of relevance and interest to students. Skills, values and understanding are taught and assessed within meaningful, 'connected' contexts. (Beane, 1991, Harste, 1992, Hamston and Murdoch 1996, Wilson 1991, Murdoch & Hornsby, 1997).

- The essence to this approach is the relationship between those learning areas concerned with 'the world around us' (science, technology, health and environmental and social education) and those areas *through* which we explore and come to understand that world (language, mathematics, art, drama, dance, music and aspects of technology).

- Units of work are **inquiry based and not thematic.** Therefore, teaching and learning sequences are designed around the unit's *key understandings or rich concepts* that drive effective learning, rather than activity based.
  (See Kath Murdoch model in Appendix A)

- The inquiry approach reflects the belief that active involvement on the part of students in constructing their knowledge is essential to effective teaching and learning. Inquiry methodology and integrated curriculum are also supported by **recent research into 'brain-based learning'.** Caine and Caine (1990) argue that the brain has a 'natural capacity for integration" and that this should be invoked by the teaching methods used in the classroom.

- **Inquiry learning parallels other student-centred and process-oriented curriculum developments** such as whole language (Goodman 1996, Harste, Woodward & Burke 1984, Cambourne 1988), negotiated curriculum (Boomer 1992) and philosophy for children (Lipman 1988, Splitter 1995).

- The focus in inquiry is **centred on process as well as content.**

A **sequence of activities** and experiences is developed to build on and challenge student perceptions. The stages are as follows:

- **Tuning in** – time to engage students, determine their prior knowledge and prepare them;
- **Finding out** – time to discover new content, concepts, new experiences to gather information;
- **Sorting out** – students organise and process ideas in a different way;
- **Making connections** – students draw conclusions, articulate new understandings and provide a point of comparison;
- **Going further** – alternative experiences or avenues of inquiry are provided to gain new insights; independent research;
- **Taking action –** students are empowered to act on what they have learned, linking theory to practice and considering the bigger picture.

Each of these stages includes a range of **"integrative strategies"** (Murdoch, p6, Classroom Connections) to assist students to develop a 'big picture' understanding of their world. It is argued that effective learning comes about when teachers engage students in strategies that employ different 'processing modes'. The deliberate use of strategies that stimulate a range of 'ways of knowing' helps students to make meaning. (Atkin 1993; 1997) Many of these strategies are discussed in the second part of this module.

References:

http://www.discover.tased.edu.au/english/integrating.htm
http://www.bosnsw-k6.nsw.edu.au/linkages/Curriculum/curriculum_intro.html
http://www.teachers.ash.org.au/bce/plan.htm

Multiliteracies Model: A Design for Learning (Kalantizis & Cope, 2003)

Multiliteracies provide a framework for re-thinking curriculum in all learning areas. Multiliteracies "focus on how literacy has been redefined by social, technological and economic change." (Anstey, 2002) Multiliteracies also refer to different modes of meaning to address some of the major aspects of change in our contemporary communications environment. These days, exchanges of meaning are rarely just linguistic. They are almost invariably multimodal. These include:

- **Linguistic, Visual, Audio, Gestural, Spatial.**

The **WHY** of Multiliteracies:

There are many pressure points for thinking about literacy in new ways:

- **Technology:** the abundance of multimedia and information technologies are shaping the way in which meaning is created and communicated. New digital resources are generating a dynamic amount of new text types other than the print based media we are familiar with.
- **Work:** as well as facing multiple occupations throughout one's working life, higher levels of literacy are being demanded in the shift from more manual occupations to occupations involving knowledge management.
- **Visual Communication:** visual literacy is necessary to interpret still and moving images which are screen rather than print based.
- **Diversity:** economies and workplaces are more globalised and there is an increasing diversity of culture and language.
- **Global English and Multiple Englishes:** standard and 'correct usage' are becoming redundant in a world where English has so many internal variations.

The **HOW** of Multiliteracies:

The Multiliteracies framework supports teachers across all learning areas to develop curriculum which ensures sound pedagogy with in-built quality assurance and which responds to the diversity of students in their classes. The framework can also be used to develop online curriculums that are responsive and accessible.

Table 2 – Multiliteracies and the Knowledge Process

Multiliteracies Curriculum Orientations	Knowledge Processes
- Situated Practice - Overt Instruction - Critical Framing - Transformed Practice	- Experiencing - Experiencing the known - Experiencing the new - Conceptualising - Naming Concepts - Theorising - Analysing - Identifying Functions - Identifying Interests - Applying - Applying appropriately - Transferring creatively

The Multiliteracies Framework – Table 3

Situated Practice *Immersion in experience*	*Either* the various knowledge, interests and experiences students bring to school (eg ways of communicating) *or* immersion in authentic active learning; linking to texts in students' lives	Eg exposure to real-world texts, e.g. video clips, websites, instruction manuals
Overt Instruction *Describing patterns in meaning*	Explicit teaching, whether it be content or skills eg uncovering the underlying patterns in meaning and communication.	Eg discussing how the texts work.
Critical Framing *Locating purpose*	Contextualising learning, making it more worldly; explaining purposes, ie what a piece of communication is for. To get what done? For Whom? Why?	Eg discussing what the texts are for, whose voices are heard and whose are absent
Transformed Practice *Adding meaning*	Applied learning. Real-world meanings, communication in practice, applying understandings to a new context. (taking students to a new place, to new learnings and understandings)	Eg making and using texts (doing something with them); applying the new knowledge about texts

"None of this is meant to imply that teachers will have to add a whole lot of new content into their existing curriculum. On the contrary, the Multiliteracies idea simply provides a framework for rethinking literacy curriculum." (PETA March 2002).

There are four elements of teaching practice in the Multiliteracies pedagogy outlined in Table 3 above. They correspond to the four knowledge processes (Table 2), which lead students on a transformative learning journey. As can be seen from Table 1, it would appear that this framework strongly supports the four dimensions of the Productive Pedagogies model.

References:

Anstey, M. (2002) Literate Futures: Reading. Education Queensland.

Kalantzis, M & Cope, W.   Multiliteracies: Teaching and learning in the new communications environment (March 2002) Primary English Teaching Association

www.LearningConference.com

http://workplacecultures.com/books/multilit_txt.html

http://www.cybertext.net.au/tct2002/disc_papers/organisation/kalantzis%20_harvey.htm

Part B: Teaching Strategies

There are many teaching strategies teachers can use to plan classroom activities within the frameworks outlined above. They include:

- Thinking Skills strategies such as De Bono's Six Thinking Hats and Mind Mapping;
- Gardners' Multiple Intelligences;
- Bloom's Taxonomy – the cognitive and affective domains;
- Habits of Mind (16 Intelligences) - Art Costa
- Co-operative learning
- Brain based learning

It is acknowledged that some of these have also been used as a vehicle for curriculum planning but it could be argued that as a strategy per se, they may not meet the full range of the four dimensions of the Productive Pedagogies. See Table 1 for comparisons. A brief summary of these strategies follows.

De Bono's Six Thinking Hats– a summary by Sylvie Labelle.

This method, invented by Dr Edward de Bono in the early 1980s, is a framework for thinking and can incorporate lateral thinking. The six hats represent six modes of thinking and are directions to think rather than labels for thinking. As such, the hats are used proactively rather than reactively. The key theoretical reasons for using the Six Thinking Hats are to:

- encourage parallel thinking
- encourage full-spectrum thinking
- separate ego from performance

White Hat thinking covers facts, figures, information needs and gaps.

Red Hat thinking covers intuition, feelings and emotions. The red hat allows the thinker to put forward an intuition without any need to justify it.

Black Hat thinking is the hat of judgement and caution. It is not in any sense an inferior or negative hat. Rather it is used to point out why a suggestion does not fit the facts, the available experience, policy being followed etc.

Yellow Hat thinking is the logical and positive. 'Why something will work and why it will offer benefits?' It can be used in looking forward to the results of some proposed action, but can also be used to find something of value in what has already happened.

Green Hat thinking is the hat of creativity, alternatives, proposals, 'what is interesting?', provocations and changes.

Blue Hat thinking is the overview or process control hat. It looks not at the subject itself but at the 'thinking' about the subject. In technical terms, the blue hat is concerned with meta-cognition.

Reference:

http://members.ozemail.com.au/~caveman/Creative/Techniques/sixhats.htm

Bloom's Taxonomy

In 1956, Benjamin Bloom headed a group of educational psychologists who developed a classification of levels of intellectual behaviour important in learning. This became a taxonomy including three overlapping domains; the cognitive, psychomotor and affective. Categories in the **Cognitive domain** remain the most familiar to educators:

Knowledge of terminology; specific facts; ways and means of dealing with specifics. Knowledge is defined here as the remembering (recalling) of appropriate, previously learned information.

- Defines, describes, enumerates, identifies, labels, lists, matches, names, reads, records, reproduces, selects, states, views.

- **Comprehension**: Grasping (understanding) the meaning of informational materials.
  - Classifies, cites, converts, describes, discusses, estimates, explains, generalizes, gives examples, makes sense out of, restates in own words, summarizes, understands.

- **Application**: the use of previously learned information in new and concrete situations to solve problems that have single or best answers.
  - Acts, administers, articulates, assesses, charts, collects, computes, constructs, determines, develops, discovers, implements, includes, predicts, prepares, relates, reports, shows, solves, transfers, uses, utilizes.

- **Analysis**: the breaking down of informational materials into their component parts, examining such information to develop divergent conclusions by identifying motives or causes, making inferences and/or finding evidence to support generalizations.
  - breaks down, correlates, diagrams, differentiates, discriminates, distinguishes, focuses, illustrates, infers, limits, prioritises, separates.

- **Synthesis**: Creatively or divergently applying prior knowledge and skills to produce a new or original whole.
  - Adapts, anticipates, categorizes, collaborates, combines, communicates, compares, contrasts, designs, devises, expresses, facilitates, formulates, generates, individualizes,

initiates, integrates, intervenes, models, negotiates, plans, progresses, reconstructs, reinforces, revises, structures, substitutes, validates.

- **Evaluation**: Judging the value of material based on personal values/opinions, resulting in an end product, with a given purpose, without real right or wrong answers. - Appraises, compares & contrasts, concludes, criticizes, critiques, decides, defends, interprets, judges, justifies, reframes, supports.

References:
http://www.olemiss.edu/depts/educ_school2/docs/stai_manual/manual8.htm

Gardner's Multiple Intelligences

Gardner defines intelligence as "the capacity to solve problems or fashion products that are valued in one or more cultural settings (Gardner & Hatch, 1989). Using biological as well as cultural research, he formulated a list of seven intelligences. Gardner defines them as follows:

1. Logical-mathematical Intelligence – consists of the ability to detect patterns, reason deductively and think logically. This intelligence is most often associated with scientific and mathematical thinking.

2. Linguistic Intelligence – involves having a mastery of language. This intelligence includes the ability to effectively manipulate language to express oneself rhetorically or poetically. It also allows one to use language as a means to remember information.

3. Spatial Intelligence – gives one the ability to manipulate and create mental images in order to solve problems. This intelligence is not limited to visual domains; Gardner notes that spatial intelligence is also formed in blind children.

4. Musical Intelligence – encompasses the ability to recognise and compose musical pitches, tones and rhythms. (Auditory functions are required for a person to develop this

intelligence in relation to pitch and tone, but it is not needed for the knowledge of rhythm).

5. Bodily-Kinaesthetic Intelligence – is the ability to use one's mental abilities to coordinate one's own bodily movements. This intelligence challenges the popular belief that mental and physical activity are unrelated.

6. Personal Intelligences – include **interpersonal** feelings and intentions of others, AND **intra-personal** intelligence – the ability to understand one's own feelings and motivations. These two intelligences are separate from each other. Nevertheless, because of their close association in most cultures, they are often linked together.

7. Naturalist Intelligence designates the human ability to discriminate among living things (plants, animals) as well as sensitivity to other features of the natural world (clouds, rock configurations).

Although the intelligences are anatomically separated from each other, Gardner claims that the intelligences very rarely operate independently. Rather, the intelligences are used concurrently and typically complement each other as individuals develop skills or solve problems.

Teaching implications:
- The theory of Multiple Intelligences implies that educators should recognise and teach to a broader range of talents and skills.
- Another implication is that teachers should structure the presentation of material in a style, which engages most, or all of the intelligences. For example: when teaching about revolutionary war, a teacher can show students battle maps, play revolutionary war songs, organise a role play of the signing of treaties and have students read novels or journal entries of the respective period being studied.

By activating a wide assortment of intelligences, teaching in this manner can facilitate a deeper understanding of the subject material.

All students come to the classroom with different sets of developed intelligences. These sets determine how easy (or difficult) it is for a student to learn information when it is presented in a particular manner. This is commonly referred to as a **learning style**. Many learning styles can be found within the classroom. Therefore, it is impossible as well as impractical for a teacher to accommodate every lesson to all of the learning styles found within the classroom. Nevertheless, the teacher can show students how to use their more developed intelligences to assist in the understanding of a subject that normally employs their weaker intelligences (Lazear, 1992).

References:

http://www.thomasarmstrong.com/multiple_intelligences.htm

Co-operative Learning

Co-operative learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a concept or subject. Each member of a team is responsible not only for learning what is taught, but also for helping team mates learn, thus promoting academic achievement and cross-cultural understanding.

After nearly 50 years of research and scores of studies, there is strong agreement among researchers that cooperative methods can and usually do have positive effects on student achievement. They also improve relations among different ethnic groups and lead to significant improvements in relationships between students with learning disabilities and other children in a class.

However the quality of achievement and other outcomes depend on the implementation of cooperative learning methods that are characterised by at least two essential elements: **positive interdependence and individual accountability.** In a group task, each member is individually accountable for part of an outcome that cannot be completed unless the members work together - in other words, the group members are positively interdependent; for example, in two-way immersion programs, native and non-native English speakers working together to become bilingual.

Some co-operative learning methods include:

- **Group investigations** to emphasise higher order thinking skills and produce a group project;

- **Jigsaw** - used with narrative material where each team member is responsible for learning a specific part of a topic, becoming the "expert" and then sharing their findings with the group.

- **Guided reading** and other integrated cooperative reading strategies

'Thus, when students work in cooperative teams in which 'all work for one' and 'one works for all', team members receive the emotional and academic support that helps them persevere against the many obstacles they face in school' (Cooperative Learning – Response to Diversity, California Dept. of Education 2000).

Constructivism

Constructivism holds that **learning is essentially active**. Constructivists argue that by definition, a person who is truly passive is incapable of learning. In constructivist learning, each individual structures his or her own knowledge of the world into a unique pattern, connecting each new fact, experience or understanding in a subjective way that binds the individual into rational and meaningful relationships to the wider world (Wilson & Daviss, 1994).

As scientists study learning, they are realising that a constructivist model reflects their best understanding of the brain's natural way of making sense of the world (Feldman, 1994). This is in total contrast to the behaviourist model that dominated learning theory in the late 19th and early 20th centuries – that is, "people expected rewards to do tasks, their brains were blank sheets awaiting instruction and intelligence was innate and largely inherited" (Abbot & Ryan, p. 67, 1999). "Constructivism is not only an open-ended form of learning; it is essentially about reality, connectivity and the search for purpose" (Abbot & Ryan, p.69). Growing evidence suggests that a constructivist form of learning aligns with brain-based learning.

Brain-based learning

Brain-based learning (from Caine & Caine: Reinventing Schools through Brain Based Learning, Educational Leadership, 1995).

Brain-based learning stresses the importance of *patterning,* that is, the fact that the brain does not easily learn things that are not logical or have no meaning. Because our natural tendency is to integrate information, we resist learning isolated bits of information. Because the specifics of instruction are always tied to larger understandings and purposes, teachers and students should use stories and complex themes and metaphors to link information and understanding – and ICT should be integrated into all these types of work.

Brain-based learning also stresses the principle that the brain is a *parallel processor* – it performs many functions simultaneously. Therefore, all meaningful learning is complex and non-linear. This means that teachers must use all available resources - including community resources to orchestrate dynamic learning environments. Teachers must overcome the natural preference for conveying information tied to clear directions and opportunities for students to "do it right" rather than to explore and experiment – in other words, in an active, constructivist way.

Some research findings from brain-based learning (some new and some not so new!) with major implications for classroom environments:

- An **enriched learning environment** with a variety of rich sensory and language experiences literally stimulate a profusion of dendritic growth in the brain. (Wolfe, 1996) Hence the importance of environmental print and stimulating material in classrooms of students of ALL ages – not just primary. An enriched environment should also include consideration of the room arrangement - formal and informal seating; low lighting; more water (8 to 15 glasses a day!); clean air; real world and multisensory experiences; multimodal experiences; challenging, novel and rich activities; greater time flexibility (two hour blocks) and opportunities for making choices. (Jensen, 1996).

- **Adequate nutritious food.** Chemicals primarily produced from food substances affect brain development and functioning. When children have nutritious food available while studying, they eat as needed and consequently earn statistically higher test scores, they demonstrate more positive attitudes towards school and also increase their reading speed and accuracy (Dunn & Milgram, 1993). A **nutritious breakfast** with adequate protein means students make fewer errors throughout the morning than those who skip breakfast. Young people who skip breakfast are inclined to eat heartily at lunch and then feel sluggish during the afternoon (Pollitt, Leibel, & Greenfield, 1981, p.77).

- **Minimal stress.** Chronic stress experienced by children causes the brain and body to **deplete available nutrients** leaving nothing available for learning.

- **Emotional intelligence.** New brain research suggests that emotions, not IQ, may be the true measure of human intelligence. (Goleman, 1995). Emotional intelligence is a better predictor of people's success than the brainpower measured by standardised achievement tests.

- **New conclusion**: there is enough evidence to convince researchers that the nature vs. nurture dilemma leans much more to the nurture side than previously believed. (Fogarty, p.27, 1997).
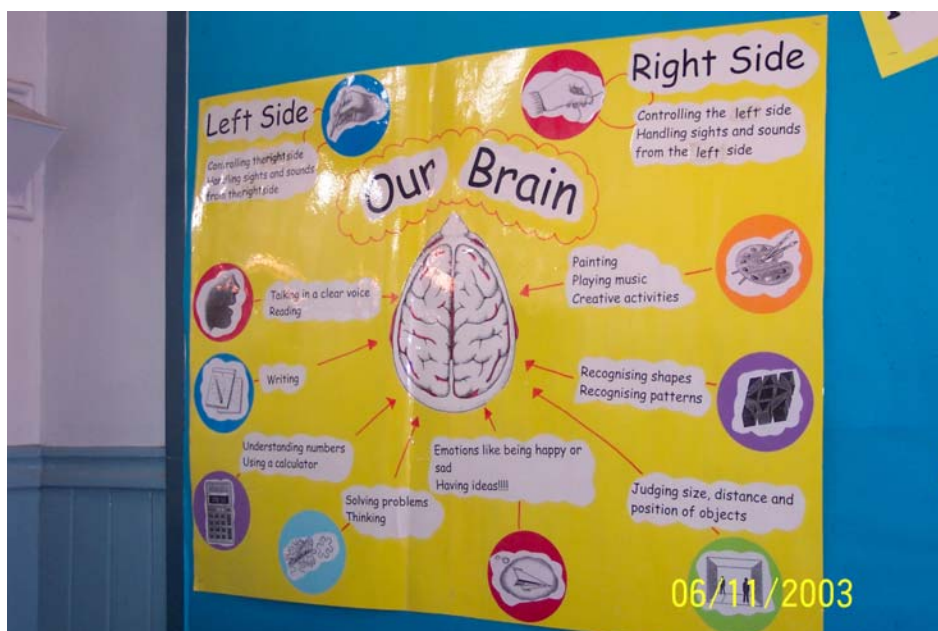
Habits of Mind -16 Intelligent Behaviours

Habits of Mind are types of intelligent behaviour that are defined and described by Dr Arthur Costa and Dr Bena Kallick in their four book series, Habits of Mind: A Developmental Series (2000). Their mission is to build an international network of people in schools and businesses that are dedicated to sharing the vision of the Habits of Mind as a foundation for building thought-full learning communities.

A "Habit of Mind" means having a disposition toward behaving intelligently when confronted with problems, the answers to which are not immediately known. The habits of mind can aid both students and adults in school and in everyday life as they encounter problems, dilemmas and enigmas, the resolutions of which are not immediately apparent.

A Habit of Mind is knowing how to behave intelligently when you DON'T know the answer. Costa and Kallick maintain that a critical attribute of intelligence is not only having information but also knowing how to act on it.

"When teachers deliberately adopt and assess Habits of Mind, it changes the design of their activities, determines their selection of content and enlarges their assessments. The bigger the circle in which the outcomes live, the more influence they exert on the values of each habit".
Art Costa

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1. Persisting

Keep on having a go even when it seems too hard.

Intelligent people stick to the task and don't give up too easily.

Persistent people use a range of strategies to solve problems.

Do you demonstrate persistence?

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2. Managing Impulsivity – not being too impulsive.

Impulsive people act on the first idea they think of.
If people are managing their impulsivity they:

- Identify and revisit their goals
- Have a strategy plan for solving problems
- Explore different strategies and think about the consequences

Do you manage your impulses?

3. Listening to Others – With Understanding and Empathy

Really listening carefully to others.
When you demonstrate an understanding of other people's ideas or feelings you are showing empathy.
Can you put yourself into that person's shoes?

Do you really listen to others or impatiently waiting your turn to speak next?

4. Thinking Flexibly

Flexible thinkers are open minded about ideas.
They are:

- willing to change their minds
- confident to express an opinion
- able to resolve conflicts through compromise

Do you consider all the possibilities?
Do you think outside the square?

5. Thinking About our Thinking (Metacognition)

An awareness of one's own thinking. Able to describe what thinking is going on in your head by:

- developing a plan of action before solving a problem
- "thinking about our thinking"

How are you thinking?

6. Striving for Accuracy and Precision

Desiring exactness, clarity and perfection.
Putting in an effort to check your work.

How are you checking your work?

7. Questioning and Posing Problems

Asking good questions is one of the characteristics of intelligent people. Students need to develop the ability to ask questions and find problems for themselves – it is not just the teacher's role.

Are you questioning and making inquiries?

8. Applying Past Knowledge to New Situations

Building on what we already know.
Intelligent people learn from experience. Gain meaning from one experience, build on it and apply the meaning to new situations.
What do you already know, what are your new learnings?

9.Thinking and Communicating with Clarity and Precision

Intelligent people strive to communicate accurately in both written and oral form taking care to use precise language, defining terms, using correct names and universal labels and analogies.

Do you avoid generalisations and distortions? Do you encourage students to avoid vague and imprecise language such as 'weird, nice, OK, stuff, junk' and to avoid interjections such as 'ya know, er, and uh'.

10. Gathering Data through All Senses

Intelligent people know that all information gets into the brain through the sensory pathways: gustatory, olfactory, tactile, kinaesthetic, auditory, visual. Maximising the ways we input information makes the information in our brains more powerful.

How do you power your brain? Do you use the arts or music to improve mental functioning?

11. Creating, Imaging and Innovating

All human beings have the capacity to generate novel, original, clever or ingenious products, solutions and techniques – if that capacity is developed. Being creative and taking risks, being ingenious and insightful provide people with the courage they need to brainstorm and create solutions to problems that may be faced.

How are you creative?
Do you take risks and push the boundaries of your perceived limits?

12. Responding with Wonderment and Awe

Being curious wondering about the world, being inquisitive and enjoying problem solving helps people become effective as a thinker. Intelligent people are curious and fascinated with what is going on around them. It is great when we can solve problems with increasing independence. Intelligent people voluntarily continue to learn throughout a lifetime.

What do you find curious?
What fascinates you about what is going on around you?

13. Taking Responsible Risks

"The only way to succeed is to be brave enough to risk failure." (Briggs, 1999)

Flexible people are able to go beyond established limits. They accept confusion, uncertainty and the higher risks of failure as part of the normal process and they learn to view setbacks as interesting, challenging and growth producing.

Do you have a need for certainty rather than an inclination for doubt?
Are your students challenged by the process of finding the answer?

14. Finding Humour

Laughter transcends all human beings. Its positive effects on psychological functions include a drop in the pulse rate, the secretion of endorphins, an increased oxygen in the blood. Humour has been found to liberate creativity and provoke such higher level thinking skills as anticipation, visual imagery and making analogies.
Can your students distinguish between situations of human fraility and those that are truly funny?

15. Thinking Interdependently

Human beings are social beings. We congregate in groups and draw inspiration from each other. Problem solving has become so complex that no one person can go it alone; several people can consider more alternatives than one person can.

Can you justify your ideas in a group? Can you willingly accept feedback from a critical friend?

16. Learning Continuously

People with this Habit of Mind are Lifelong Learners. They are always striving for improvement, always growing, always learning, always modifying themselves and finding new and better ways to do things.

Do you confront new situations as an opportunity to learn? Do you have the humility to know – and to admit – that you don't always know the answer and are not afraid to find out?

References: http://www.habits-of-mind.net/

What defines a quality teacher?

No matter what pedagogical model or strategies teachers choose, educational research demonstrates that teacher quality is the key determinant of student learning.

"Teacher quality is the single greatest factor in explaining student achievement, more important than classroom related issues such as resources, curriculum guidelines and assessment practices, or the broader school environment such as school culture and organisation" (Lovat, ACDE, p2).

To be a quality teacher, Robert E. Glenn in "What Teachers Need to Be", (2001) exhorts teachers to demonstrate the following characteristics:

- **Exhibit enthusiasm.** Show that teaching can be fun and this eagerness for teaching will have an impact on the motivation of students.

- **Know your content.** Keep up with your field of expertise. No matter if this is your first year or thirtieth, keep up with the changing trends in your field.

- **Be organised.** Efficient organisation allows you to spend more learning time with students. Have a way to handle routines: collecting student work, distributing materials etc.

- **Teach actively.** Effective teachers are involved. They move around. They don't stand around but are busy. They are actively involved with students and other staff.

- **Show a good attitude.** Voltaire said: "The most courageous decision one makes each day is the decision to be in a good mood." Children don't need teachers who stay in a foul mood. They need models with positive attitudes. Listen to what you say to others and to your tone of voice. You should be displaying care, concern and respect.

- **Establish successful classroom management.** ... from the first day! Discipline and reasonable structure are essential for students to be on task and to have an orderly class environment. Be consistent and fair.

- **Pace instruction.** The amount learned is related to the opportunity to learn. Students learn the most by doing, not by watching, standing in line or listening.

- **Maintain good people skills.** Teachers must work well with others. If people don't like your behaviour as a teacher, they will not want to be around you, much less perform for you. Education is a people business. Good human relations skills are imperative.

- **Communicate clearly**. Effective teachers give information clearly. Be concise. Demonstrate as well as explain. In presenting new information, teachers must give accurate directions. This process includes explaining, outlining, summarising and reviewing. Too often children have no idea what they are learning or why.

- **Question effectively**. Questioning is a powerful teaching tool, through which productive thinking occurs. Ask rich contextual open/closed questions at the appropriate times both to the whole class and individuals.

- **Differentiate instruction**. One of the biggest challenges to teaching is working with students of varying learning styles, personalities and learning rates. Teachers need to mix auditory, visual and hands-on techniques. For specific lessons, subgroup students with similar weaknesses or skill gaps.

- **Build success into your class**. Success rate is important. The student for whom work is continuously too hard can become frustrated, resulting in behaviour problems and loss of effort. Research indicates that a success rate of at least 80% is optimal. When students are not successful, provide further instruction and/or simplify the task until they can master it.

- **Hold high expectation**. High expectations must be communicated for good performance. Successful teachers don't just accept participation – they require it. One can be demanding without being unpleasant or mean. Students respect teachers who expect them to do their best.

- **Create a pleasant atmosphere**. A classroom that is dismal, drab and dreary will decrease the percentage of learning success. Cheerful and happy classrooms stimulate learning.

- **Be flexible**. Teaching requires flexibility. Can you adjust and adapt when timely topics come up instead of staying with your lesson plan? That is: go with the

teachable moment! Are you sensitive enough to student needs to vary from routines and rules when necessary to help a child?

Conclusion

The teaching attributes outlined above are what keep teachers grounded in their day-to-day dealings with students. However, good teachers also appreciate the value and power of research by colleagues at all levels in the educational field to broaden perspectives and enhance teaching practice. They can exchange ideas and knowledge about teaching and learning to the benefit of their students. In so doing, they become confident users of shared language and understandings associated with all aspects of pedagogy. Despite what is seen by some as educational jargon, many teachers enjoy talking the 'teacher talk' or a 'professional parlance' about what they do. Discussions about what is educationally appropriate for their students and their learning isn't 'dumbed down'. There is common ground when speaking to colleagues at all educational levels, whether from colleges and universities or pre-schools and middle schools. It should be as much a code for professional acceptance and credibility as it is for other professional colleagues in law, medicine and other tertiary fields of endeavour.

This can only add to the repertoire of flexible teaching strategies in each teacher's pedagogical toolbox. It is hoped that the frameworks and strategies outlined in this module have both clarified and extended this repertoire - just as the ICT specific modules that follow in this program for Embedding Learning Technologies in the Middle School should further expand teachers' repertoire. In this way, teachers are life long learners themselves, and as such are modelling life long learning to their students.

Lea Chapuis 2003

References:

Abbey, N., Pedagogy: The Key Issue in Education, Discussion Paper Parts 1 & 2, 2003

Anstey, M. (2002) *Literate Futures: Reading*, Education Queensland.

Atkin, J. 1993 "How students learn: a framework for effective teaching", IARTV seminar series no. 22, Feb, Melbourne

Curriculum Corporation, EQ Australia – success for all – Students at risk, Winter 2003

Kalantzis, M., cope, B., Fehring, H., "Multiliteracies: Teaching and learning in the new communications environment", Primary English Teaching Association, March 2002

Kalantzis, M., Cope, B., "Designs for Learning" (draft 2003) , RMIT.

Lovat., T.J   "The Role of the 'Teacher' coming of Age?" Australian Council Deans of Education, Discussion Paper, 2003

Murdoch, K., "Classroom Connections, Strategies for Integrated Learning", Curtain Publishing, 1998

Silver, HF., Strong, R.W., Perini, M.J., "So Each May Learn – Integrating Learning Styles and Multiple Intelligences", ASCD, 2000