

The Edge on Learning ¹

John Munro, University of Melbourne

A scenario

Visualize the situation. Bob's school is coming up for assessment. The dominant educational policy is C21st relevant learning in the middle years. Boy's education is not longer the flavour. Literacy and numeracy are passé. C21st learning and the middle years.

Bob's results in this area aren't all that impressive. His staff tell him the middle years students aren't learning how they used to. They don't sit still and listen. They don't do homework. They're not motivated to learn quadratic equations, why the Crusades occurred or to read Othello.

His regional director gives him advice. Give the students diaries that have study notes in them.

The president of the parent group gives him advice. Give them lap tops.

The highly paid consultant gives him advice. Assess their learning styles. Use whole brain teaching.

Bob's got a problem. Where does he start ?

Bob has learnt how to read ledgers. The bottom line is that the middle years students aren't learning. They were 30 years ago when he began to teach. They were still learning 15 years ago when he began to move up the administrative ladder. Why aren't they learning now ?

Bob convenes a meeting of the leadership team. Why aren't the students learning ? They have tried integrated studies, authentic learning, higher order thinking, Bloom, de Bono, even multiple intelligences. One colleague mentions the X generation. Another mentions the Y Gen. Bit by bit they suggest some key concepts, 'buzz words' that have emerged re learning and education over last 20 years.

Bob decides that his staff needs to know more about contemporary ideas on learning. If they can understand recent ideas on learning then they should be more able to put in place teaching that matches how their students learn. He call in a consultant. Her topic is The Edge of Learning. This is her spiel.

What's new about learning?

Trends in how we see learning We can identify a number of recent trends in learning

1. How our culture affects what and how we learn.

In recent years we have come to understand that all knowledge and learning has a cultural base. If, as Bob's staff noted, students are learning differently today from how they were learning 20 years ago, it is due, in part, to changes in the culture or society over the past 30 years. We now understand more about how changes in a person's culture induces changes in how people think. Two key ways in which this happens; in how the culture uses signs, symbols and language, for example, 'fridge' and how a culture solves its problems; these become an individual's ways of thinking.

To get an insight into why Bob's students may think differently from students 30 years ago, you just need to look at differences in

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- How we deal with the problem of communicating; how we now use fax and mobile phones when 30 years ago we used writing, differences in how students frame up a phone message now from 30 years ago
- How we deal with transport problems
- How we deal with being amused, entertained, the changes in being entertained by personally managed DVDs from listening to radio serials and going to movies once a week, the types of games they play now, the skills they learn about being inventive, playing make believe, doctors and nurses, learning to symbolize, to model how to interact, etc.
- How we deal with marketing, retailing, not so much what is done but how it is done
- How we deal with banking, operating economically
- How we deal with problems of gardening.

Bob's teachers can, for example, look at how messages are delivered in the media now, how much information is presented in a 'grab', how viewers are challenged to buy, how often they are encouraged to challenge or question, how long they need to sit to get the overall message .

We don't have anything like the time necessary here to unpack how these have impacted on how students today learn. However, we only need to look at differences in how the tools we have used for dealing with information have altered how we think about our brains:

Way of thinking about learning		
Using the wax tablet to record what we know	telephone exchange	computer
Experiences etched on hot wax	link incoming information with output	represent knowledge briefly and long term

You can see examples of how this happens all around us. One problem our culture had was to tell when a food item was stale. It invented the practice of indicating on items the dates by which they may no longer be useful. These have become ways of thinking for the present generation. I never told my father I thought he was 'past his use by date'.

A second problem we had was to preserve food. We did this by making it cold. How often do we 'put ideas on ice' ?

If you need to see something a second or third time, you ask 'run it past me again'. How often have you asked someone to 'run ideas past me again'?

If we want to understand how our present school population learns and thinks, what the contents of their minds are, we need to get inside the language they use and how they use tools like mobile phones, the Internet and data bases, to solve problems they encounter.

We now have a better understanding of how all learning has a cultural base. Living in an Internet world has led to differences in how individuals learn, how they think, solve problems, the ways in which they link ideas. The wealth of opportunities offered by the Internet for learning is causing is to re-define our concepts of communities and partnerships. They have also raised is sues to do with the ownership of information , how the information can be converted to knowledge and vice versa.

We always need to look at learning in context. Would Skinner's pigeons have learnt as much if they hadn't liked the taste of the pellets ? Would Pavlov's dogs have dribbled if they had been offered silver beet ? What will whet the appetite of Bob's middle years students ?

2. *The concept of learning in groups.*

In the 1980s and 1990s we became more aware of the value of having students learn collaboratively, in groups and partnerships in which they acted on each other's knowledge. Helping students work together to put together a group's knowledge of a topic has become increasingly

important. They learnt in contexts in which they spent some time in physical proximity. We became aware that what one student in the group may know at one point became something everyone in the group knew a little later.

The Internet offers the opportunity for group learning not limited in this way. We can have a group that comprises learners who are thousands of kilometres apart sharing their knowledge and forming the knowledge of the group. At this point we don't know much about how ether-based or hyper space community partnerships learn but without doubt we will know in the future.

Learning groups haven't taken off in Bob's school. The middle years students don't learn well collaboratively. It is hard to mark and score the work of each student when they work in groups. Surprisingly, some the teachers who taught the students in the Early Years suggested that at that stage these students did learn well in groups. It must have been that the work was easier.

3. *The notion of knowledge focused classroom.*

Over the past decade we have seen a focus on knowledge, intellectual capital, knowledge management and enhancement. This has led to a consideration of what, actually, knowledge is and how we teach it. Knowledge can be taught from different perspectives;

- in the past we have taught knowledge, for example, History, Social Studies, Science, as absolute, set in concrete and taught in specific subject areas by specialists who maintain a high level of control. The focus is on knowledge inculcation and retention.
- people now see any topic as being our best social interpretation of reality at that time and taught in an interrelated way so that links between different areas of knowledge are clear by teachers who mutual collaboration, different students taking the leadership for teaching particular topics and working in self managed learning teams. The focus is on knowledge enhancement.

4. *Learning to convert information to knowledge and to proceduralise and conceptualize it.*

A fourth development is students learning through research- or enquiry oriented types of tasks in information rich contexts; 'problem based learning' and 'solution focused learning' tasks. These tasks provide the opportunity for students to learn by researching critically a specific topic or issue and to communicate the outcomes of the research in a coherent way. The key focus is on the conversion of information to knowledge in relation to a particular issue or problem, enhancement of the knowledge and its display as information. Feedback contingent on the display frequently leads to further learning.

Successful completion of this type of task requires the co-ordinated use of a range of learning strategies, attitudes to learning, beliefs about knowledge and information, and a knowledge of how to convert information to knowledge. It requires students to have motives or intentions for learning, to frame up questions or queries re the knowledge, to think through these questions or enquiries, to operate as an information processors and to display the outcomes of this investigation in terms of specified parameters. These tasks can help students learn generic strategies for self direction and management as knowledge generators, to think creatively and innovatively.

A key aspect of this approach to learning is the notion of 'informed ignorance'; students are aware explicitly of questions and issues for which they do not have a solution at one point in time.

5. *How we compartmentalize learning*

A fifth trend relates to how we compartmentalize learning or 'carve up' students. In the past we focused on separate aspects or components of learning. We saw children's self concept or self esteem separate from what they knew. We talked about helping students develop a more positive self concept or 'attitude' before we began to teach them new knowledge. More recent models of learning have shown this type of separation to be erroneous. We now realise how unrealistic it is to separate the two. The emotion we 'invest' in a set of ideas at one point in time influences how we think about that topic in the future. If we invest positive emotion in what we are learning, we will be more

motivated to want to learn related ideas in the future. Separating emotion and cognition when we examine students learning and thinking is inappropriate. There are other ways as well in which we have carved up learners in unrealistic ways. This has occurred in a range of ways. We need to see that the who in each 'pair of sneakers' as an integrated whole.

The content that students need to learn has also been carved up differently in recent years. Traditional subject boundaries have been re-drawn and new subjects have been developed, for example, International Studies. The re-arrangement of content areas leads to the possibility of new conceptual areas, innovation and creativity.

The ways in which we carve up students' use of learning time and our awareness of how students' learning is influenced by earlier activities is increasing. In Bob's school his Year 10 students are less oriented to learn quadratic equations immediately after boisterous lunch time activities. Effective teachers learn to read these signs and integrate the emotional orientation of a group with the content. Future research may investigate these influences in greater depth.

Not only does the time of day affect the efficiency of learning but how we use the time in classes also has an effect. The effect of wait time on learning has received a lot of recent attention. A teacher who gives students time to reflect on questions and issues during an interaction is more likely to develop higher order and deeper learning.

A key focus of contemporary is on integrated learning.

6. *What is seen as useful knowledge ?*

A sixth trend relates to what is seen as useful knowledge. The knowledge a person has about a topic can be in several forms. A topic can be understood in particular contexts. It can also be understood in more abstract and decontextualised ways. It can be understood as a series of actions. Teachers for decades have known that their students know in these different ways. What has changed in recent years is which types of knowledge are valued by formal education. Schools and teachers did not see contexted or 'everyday', 'real world' forms of knowledge being as useful in formal education. Multiple ways of knowing, such as Gardner's multiple intelligences and the learning styles theories have over the last decade, told us that knowledge in the range of different forms is valuable.

A related aspect that we have come to know much more about in recent years is what students already know about a topic and how well the teaching makes use of this. We now know that students' existing knowledge can be in the range of ways noted above. All learning starts with what students know. Students have existing knowledge about a topic, what to do to learn it and whether they can be successful as learners of the ideas. Students' existing knowledge also lets them see that they don't know. Students' informed ignorance of a topic influences how well they can learn it.

Students need to learn how to convert or move between the various forms of knowledge. Recent research has shown that if you visualize when you read or listen to a message, you can understand it better. This also helps you retain the knowledge more efficiently. It also helps you think about a set of ideas in more creative ways. Having students visualise a set of ideas, manipulate them in imagery, helps them think more creatively and innovatively.

7 *Synthesis of the neuropsychology and how we learn*

Another recent trend in learning is the synthesis of the neuropsychology and how we learn. That is, scientists have linked how the brain operates with how we think. Improved neuropsychological procedures such as brain mapping, have allowed us to monitor and track what learners do as they manipulate their knowledge. This has permitted improved links between 'the meat' and 'the thoughts'.

We can now, for example, see links between learning a new idea, (that is, holding it briefly) and remembering it several days later. Neuropsychological studies have shown that forming a new idea is matched by changed electrical activity in some synapses. Storing the idea in long term memory involves changing the structure of sugars in subcortical areas of the brain.

This means

learn new idea, retain briefly
change in electrical activity

- 1 -

store and retain ideas long term
change in sugars in brain

This doesn't mean we should have children eat more sweets to build up their long term memory ability. A key issue for us, however, are the mental actions we have students take to make these changes. There are learning actions students can take to cause the sugar molecules to change, for example, 'What are the main ideas? What are they like that I already know? Where do they fit in?'

These links have allowed us to understand exceptional thinking and behaviour. Recently we heard of a gifted mathematician who was able to produce superior outcomes was shown to be using at once areas of the brain that most people didn't use simultaneously. We need to examine the efficacy of some 'brain models' of learning, for example, 'right brain learning' or 'whole brain learning'.

The link between emotion and learning a particular set of ideas that we mentioned earlier is also shown in neuropsychology. The information defining the ideas passes through the areas of the brain that handle emotions on their pathway to the area of the cortex where they are processed.

Music can influence learning effectiveness. Mozart's music can assist students to learn ideas that are learnt while it is being played. It is believed that this is because the rhythmic patterns in the music link with and induce particular brain waves that assist the storage of knowledge. One school in which I taught in the 1970s alternated between ballet and marching music in the 5 minute break between classes. I often had the feeling of pirouetting into some maths classes and goose-stepping into others. It would have been interesting to research whether students were more creative in lessons following Tchaiovsky and more set up to learn procedures following John Philippe Souse.

A great deal of interest has recently been invested in how particular vitamins and minerals affect learning ability. We have known for a while that Ritalin can help some students temporarily to organise their brain hardware and focus attention while some food colourings and foods such as Twisties can lead to hyperactivity for some students. Over the last 7 years a number of studies have shown that memory difficulties such as recall of vocabulary, disorientation and problem solving ability are often linked with reduced beta carotene and vitamins B6 and B12. Reduced ability to concentrate, mood disorders, fatigue and irritability have been linked with lower niacin and thiamin. Foods like Vegemite are rich in some of these chemicals. Not only can we have 'happy little vegemites' but also 'clever little vegemites'. These studies show how learning ability should not be seen in isolation from the more 'hard ware' aspects.

Colour in information can also influence learning. We are all aware that particular colour combinations in art and film are effective in both assisting memory and emotions. Artists and film directors know about these effects intuitively. In teaching, using the same colour on a white board for a topic on a second occasion can help students recall what they learnt on the first occasion.

8 *The role of language in learning*

Our understanding of the role language plays in learning has changed. Like Piaget, we used to believe that we used language simply to say what we knew, to communicate. Thanks to the work of researchers such as Vygotsky, we now understand how the language we speak becomes our main vehicle for thinking and learning. The language we use becomes our inner language, the voice in our heads, the self talk we use during learning to guide what we do. Learners who develop more effective 'self scripts' are more able to learn effectively. Effective teaching helps students learn to communicate with the information.

Self talk underpins the current focus on teaching students higher order thinking strategies, helping them learn techniques such as de Bono's 6 thinking hats. Students who lack effective self talk will be less able to learn these procedures.

The talk during learning can be with other learners, the teacher, or you can have 'a conversation with yourself', for example, when you interact with information on a computer terminal. This is an

aspect of the 'reflection during learning'. Educators need more understanding of the conversations learners have in learning situations. A major way in which learners learn in conventional classrooms is by 'doing tasks' and we need to help students learn effective self scripts for having conversations about and with the tasks they are doing. A key issue for educators in the future : Do learners need to learn both new language or how or why to use it during learning ?

The trend to on-line multi-media learning, has meant that students need to communicate in a range of languages; written, spoken, visual and action. They need to use each of these languages to process new information, to question, debate the new ideas, to link them with what it known, display what is known or has been learnt, to have their attention directed and to use the feedback provided for knowledge display.

9. *Self-regulating and self-directing learners*

A related key concept in contemporary learning is self-regulated learning and self-directing learners. In the information rich C21st we want students to learn to manage and direct their own learning and to become life long learners. They develop this competence through their 'self talk' or 'inner language'. They learn '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 are motivation to achieve and students' goal orientation. The capacity to learn this competence is influenced by students' ability to reflect, personal goal setting and academic attainment. The links between self-efficacy, motivation to achieve, self management and the use of a range of learning strategies.

10. *International learning and thinking*

Given the increasingly global world in which students live and the possibility that many of the information sources they access originate in other countries, it is important that students learn to interpret ideas and tasks from an international perspective. This helps them to capture a richness and diversity in both process and product that is not possible within a single cultural perspective. International learning could be conceived of in different ways.

1. a homogenous 'Macdonald's' global learning approach, where all students learn in the same way and individual ways of learning are regulated.
2. a trans-cultural, multi-cultural learning approach, where ways of learning from different cultures, recognized as unique, are combined without loss of uniqueness into an international model.

This would allow us to recognize what is common and shared at international level and what is unique to each culture. Uniqueness to a culture at one time can enrich the international perspective at a later time.

A student recently asked me : "Who was the first Chinese to discover gravity ?" When I reviewed the commonly used text books on Physics, I found no reference to the discovery of gravitation other than from a Western European perspective.

Cultures also may differ in how they prefer to display knowledge. Some cultures may value imagery thinking over abstract thinking. Individuals in these cultures may have difficulty that expressing creative ideas in sentences specify knowledge in a linear way. Some cultures link ideas in a serial way, some in a non-linear way and some in a circular way. International education needs to be sensitive to these ways of thinking. Interpreting outcomes and processes from a cultural perspective assist in developing mutual understanding cultural differences and a mutual respect when it can be seen that the same outcome can be achieved in a variety of ways.

<p><i>What are the differences in approaches to learning between, say, year 1, year 5 and year 11 students?</i></p>

The consultant thought that it was important to show how students' ability to learn developed gradually. She discussed how students in year 1, year 5 and year 11 gradually learnt in some of the areas above, for example

- re learning self talk; year 1 students are still needing to talk aloud they are gradually internalising their egocentric speech, year 5 students are more able to use self talk to manage their thinking and learning but still need to have effective scripts modelled for them by teachers while year 11 students can generate effectively their self talk and use it to manage their thinking.
- in learning in cultures, groups' year 1 students are learning in a culture in which a 'guardian' (adult) is seen as the leader, year 5 student groups are characterised by dual leaders (guardian + peer leader), year 11 students operate in peer groups. Each group structure influences learning.
- re the forms of useful knowledge students have about a topic, year 1 students have knowledge largely in imagery and action forms and use language to talk about this knowledge. Year 5 students have begun to use language in more complex ways and talk about the real world in abstract ways. Year 11 students are able to talk about more abstract principles and generalizations.
- re the memory strategies students use to learn, year 1 students use simple short term memory strategies for retaining knowledge such as repeating it over to themselves. Year 5 students are beginning to use more complex rehearsal such as associating ideas to be remembered and can spontaneously think back to the situations in which they experienced the ideas earlier. Year 11 students use elaborate memory strategies.

Review aspects of learning

At this point Bob's staff felt they were drowning in the information about learning. They needed to review the apparently disparate trends in learning.

How our culture affects what and how we learn.	Synthesis of the neuropsychology and how we learn	How we compartmentalize learning	Converting information to knowledge, proceduralise and conceptualize it
Knowledge focused classroom	Trends in how we see learning		International learning and thinking
What is seen as useful knowledge ?	The concept of learning in groups	The role of language in learning	Self-regulating and self-directing learners

How can we synthesise these ideas and develop effective learning programs?

Unpacking and integrating learning : Learning functions

Bob's staff also needed the apparently disparate trends in learning mentioned above to be integrated and operationalised into a learning framework.

Trend in learning	Implication of teaching
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How our culture affects what and how we learn	<p>Allow students to learn</p> <ul style="list-style-type: none"> • the signs, symbols and language of each subject • the ways in which our culture solves its problems becomes our ways of thinking.
Learning in groups	<ul style="list-style-type: none"> • Collaborative problem solving in groups and partnerships • Allowing a learning community to develop in a classroom
Knowledge focused classroom	<ul style="list-style-type: none"> • Each subject is our best social interpretation of reality at that time and taught in an interrelated way. • Students take the leadership for teaching particular topics and working in self managed learning teams. • Teach knowledge enhancement.
Convert information to knowledge, proceduralise and conceptualize it	<ul style="list-style-type: none"> • Use 'problem based learning' and 'solution focused learning' tasks. – Encourage joint problem solving, sharing solutions. – Allow learners to internalize how others solve problems
link emotion with learning a set of ideas	<ul style="list-style-type: none"> • Students invest positive emotion in what they have learnt
Multiple forms of useful knowledge	<ul style="list-style-type: none"> – Use the range of ways in which students know. – Teach students to convert between knowledge in different forms
Develop the language of learning	<ul style="list-style-type: none"> – Help learners develop effective 'self scripts'. – Use self talk to teach higher order thinking strategies
Develop self regulating and self managing learners	<ul style="list-style-type: none"> • Allow students to manage and direct increasingly more of their learning. •

Over the last century a number of theories of learning have been proposed. Not surprisingly, given the complexity of human learning, none by itself has been useful for implementing broad-based effective teaching. One framework is the learning interactions or functions model. By identifying the conditions under which learning is most likely, you can end up with a theory of teaching referenced on the set of learning interactions.

Suppose you are teaching a class about endangered species

Examples of learning functions include students

learning function	example
have an explicit purpose or reason for learning	Why might it be useful to learn about groups of animals that are in danger of becoming extinct ?

visualise the outcome or goal of the learning	What might you know having learnt about this topic ? Imagine your project at the end of the unit. What might it show ? What might it tell people ?
use aspects of what they know; <ul style="list-style-type: none"> multiple ways in which knowledge is stored how to recode knowledge between these ways, one's self efficacy one's knowledge of how to learn , one's metaphors for learning . 	What do you see in your mind when you think about endangered species ? What words do you think of ? What do you know about endangered species ? What do endangered species do ? What can you do to learn more about endangered species ?
develop a pathway to their goal	What will you need to do to finish your project ?
change what they know in a particular contexts, supported, 'scaffolded' ways	Learn about particular endangered species, one at a time
gradually clarify, abstract and decontextualise the ideas learnt	Generalise about particular endangered species. When is a species more likely to be endangered ?
respond emotionally to the ideas learnt	How interesting /useful is what you have learnt ? Who did most of the learning ?
identify the strategies used to learn successfully	What things did you do to help you learn about endangered species ?
seeing learning progress being made, monitoring your learning	What questions can you answer now that you couldn't answer earlier ?
encode new knowledge in long term memory, integrating it with what is known, practise recalling it	Say as briefly as you can what you have learnt How is this similar to /different from what you knew ? Imagine yourself remembering the ideas Draw an icon to help you remember the main ideas
apply, transfer and generalise the new knowledge to a range of situations,	You are member of committee advising the Chinese government about what steps to take to stop the Giant White Panda becoming extinct. What might you recommend ?
automatise it so it can be more easily used	
practise organising the knowledge for display in assessment contexts	Plan how you will organise what you have learnt for the poster

This set of interactions can guide

- how teachers organise their teaching, take on board all of the trends in learning above.
- how students can learn to be self managing and regulating, by learning to ask themselves the above set of self instructions as self scripts.

Consider students in an information rich context wanting to enhance their knowledge of a topic by accessing information sources. They may

- frame up a challenge or a reason for learning, identifies the questions they want to answer
- have an impression of where they want to end up, what they will know
- stimulate what they know about the topic. If the challenge were to design an improved carton for holding fresh milk to be sold in retail contexts, they can use their existing knowledge to

shape up questions to ask about desirable shapes, flexibility (not breaking or rupturing), whether there is a need for it to be insulated re heat or light, its ideal weight, aesthetic features.

Clusters of teaching procedures match and support each of these functions. We show the link between each learning function / interaction and particular teaching procedures.

Individual difference and learning style have an impact on each of the interaction. Learners differ in how they

- are motivated to want to learn
- engage with the teaching information and make links with what they know
- display what they know
- use corrective feedback throughout the learning
- change what they know
- store what they know
- automatise what they know.

Each function emerges in learner interactions with information, whether through interactions with peers, teachers and with non-human information bases. Key issues include

- different learners display each function in different ways.
- teachers activate them through their systematic use of a range of teaching strategies.
- the effectiveness of a lesson depends on how they are put in place.

What is different about our approach, as adults? How can we synthesise these ideas and develop effective learning programs? How can we keep in touch with new developments in this field?

Teachers and schools learning : Application of the model to Bob's middle school transformation

So far we have looked at students learning We can also use the set of interactions to analyse and enhance adult and, in particular, staff learning. The notion of adults learning, with models of lifelong learning have expanded over the last decade. This has led to new models of professional development, for example, professional action learning teams, solution based professional development and problem based learning.

Bob wants his staff to incorporate the analysis of learning into their middle years teaching. He wants to use the model of learning in two ways:

- To develop effective classroom teaching procedures that match how students learn.
- To develop a learning community in his school. This will comprise groups of teachers researching novel teaching procedures and communicating these to colleagues.

Bob leading a learning community

Bob assumed that institutions learn by putting in place the same learning interactions as individual learners do. With a second consultant he developed a 'how to' model for his school being a learning organization.

Leading a learning community, then, involves assisting the community to implement each learning interaction. The implementation was, however, more complex.

They saw the community as consisting of multiple tiers, with each tier learning in a particular domain with particular purposes and goals for learning.

- individual members; students, parents and / or teachers.
- middle level leaders; faculty or department heads or the KLA leaders; each leads one of the learning groups
- leadership team for the organization or community; leads learning at the global school community level.

The leadership team examined the types of learning activities that each tier in the school community would use to achieve effective learning by working through each learning interaction or function.

The community consists of multiple tiers, with each tier learning in a particular domain with particular purposes and goals for learning.

- individual members; students, parents and / or teachers.
- middle level leaders; faculty or department heads or leaders; each led a learning group.
- leadership team for the community; led learning at the school community level.

The leadership team examined the types of learning activities each tier would use to learn by working through each function.

- The school developed a broad action plan for school wide learning that
 - explicated and operationalised its vision.
 - identified and collated the relevant existing knowledge of the staff.
 - decided what would be the unit of change or growth.
- The content to be learnt was organised into 'digestible' units.
- The means by which learning would occur was identified Within each KLA the staff could work in small collaborative learning teams in which they could pursue action research projects.
- An operational plan for community learning was developed and implemented.
- The outcomes of the learning were identified and shared with the community.
- The community reviewed, evaluated the outcomes of the learning, used relevant outcomes into enhance knowledge / practice , plans and learns further.

Application to schools and communities learning

What does the research say effective school leaders do to help their staff learn ?

Blase (1999, 2000) examined teacher perceptions of how principals' leadership styles influenced classroom instruction. Their research noted two themes: Effective principals

- (1) talked with teachers to promote reflection and
- (2) promoted professional growth.

Five primary types of dialogue scripts that encouraged teachers to reflect critically on their learning and professional practice were reported. Principals judged to be effective

- made suggestions that were purposeful, appropriate, non threatening. They were characterized by listening, sharing their experiences, using examples and demonstrations, giving teachers choice, encouraging risk taking, recognizing teachers' strengths, and maintaining a focus on improving instruction.
- gave feedback that focused on observed classroom behavior, was specific, expressed caring and interest, praised, established a problem-solving orientation, responded to concerns about students, and stressed access to follow-up talk.
- modelled and demonstrated teaching techniques in classrooms and positive interactions with students.
- used inquiry and solicited teachers' advice about instructional matters.
- gave praise that focused on specific and concrete teaching behaviors.
- distributed professional information, encouraged teachers to be involved in workshops and conferences, and encouraging reflective discussions and collaboration with others.

Effective principals used six strategies for fostering professional growth : they

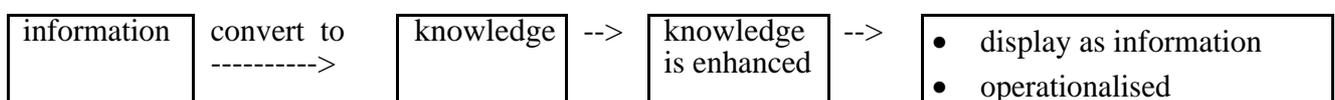
- emphasized the study of teaching and learning and provided appropriate staff development opportunities to learn new strategies and new learning techniques.
- supported collaboration among teachers. They modelled teamwork, provided time for collaborative work, and actively advocated sharing and peer observation, observing other classrooms and programs.
- developing coaching relationships among staff.
- encouraged, supported and resourced the redesign and fine tuning of instructional programs and supported a range of approaches to teaching and learning.
- applied the principles of adult learning, growth, and development to staff development.
- implemented action research to inform instructional decision making. This activity provides the necessary class and school-based data about learning that teachers need to determine the effects of what they do in their classrooms (Calhoun 1994).

Principals seen as most effective implemented practices that allowed learning to occur. The types of dialogue reported and the strategies for fostering professional growth suggest an understanding of learning by the most effective principals. It is worthy noting that none of the studies reviewed for this paper present an explicit model of learning. The need for such a model is even greater when one considers that the goal of the community learning is for changed practice to enhance the learning of school students.

Implications for the future

Effective learning in an information rich world involves the efficient conversion of information to knowledge, enhancement of the knowledge, its operationalisation and its display as information.

Effective learning in an information rich world involves the efficient, of the, its.



Access to appropriate information and the opportunity to acquire the knowledge necessary for its conversion are challenges that face future educators. As well, schools will need to examine seriously the means by which they assist students to acquire the means for doing this independently and spontaneously. The concept of self-managed and regulated learning is likely to be one focus in successful schools of the future.

Possible future cultural changes and their implications for learning and for school leadership

Possible cultural change	Possible change in learning, knowledge enhancement	Possible changes in school leadership activities
Increasing use of internet based information bases	How to convert information to knowledge efficiently and rapidly	Develop skills in leading instruction in the conversion of information to knowledge.
Increasing use of e-learning without teacher interface	Develop self managing, self directing learners	Provide opportunities for students to learn gradually to be self managing in the e-learning context.
Information sources are increasingly cross cultural, international, global	Teach students to think and learn internationally, to understand key concepts from multiple national perspectives	Provide exposure to different cultural perspectives, ensure students learn about different cultures, need for explicit values teaching.
Information sources are increasingly censored, controlled by media groups	Teach students to 'read between the lines', infer	Provide opportunities for exposure to different interpretations of the same topic, develop a knowledge of censorship.
Trend to virtual learning contexts with less focus on 'hands on' experiential learning, procedural learning	Teach students how to map conceptual knowledge into procedures, how 'to do'	Provide curriculum opportunities for relevant procedural knowledge development, identify the key procedures for C21st living.
Groupings of students in schools will be on the basis of similar knowledge in particular domains	Students learn to learn co-operatively in multi-age groups	Develop the concept of learning in particular areas as a journey and students of similar knowledge have the opportunity to follow this journey. Each student is a member of several learning groups within a school.

These outcomes will be more likely in schools in which staff have the opportunity to learn more about how C21 students learn. Schools that are genuine learning communities may set learning goals for themselves that target the acquisition of this knowledge and its application to the processes and structures they implement to achieve their core purpose of successful learning for all students.

Who else but the school leaders can take their school community to the edge of learning and maintain the learning edge ? It is important for the entire community that school leaders take on and build their roles as leaders of learning and knowledge enhancement and leaders in this process.

Dr. John Munro
Faculty of Education
The University of Melbourne

Parkville, Vic. 3010
Australia
Phone: 61 - 3 - 8344 0953
Fax: 61 - 3 - 8344 0995
j.munro@unimelb.edu.au