Getting a grip on
Inquiry Learning

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What is Inquiry Learning?

Trying to establish a definition of inquiry learning is like trying to grab a bar of soap in the bath. Every time you think you have grasped its essence it slides away as another piece of literature or concept challenges your understanding. I understand inquiry learning to be a classroom approach that provides learners opportunities to actively develop skills that enable them to locate, gather, analyse, critique and apply information to meet needs in a wide range of contexts. Through this process learners will use and develop a range of thinking, information and learning skills that will be part of their development towards independence as learners.

There are many varied approaches to inquiry learning. An examination of the range of approaches will show that there is a broad construct (diagram 1) within which they all fit.

The 2 horizontal segments of the field contain two major approaches to Inquiry Learning. I borrow the descriptive terms for these from Dr. Ross Todd.

Celebration of the Understood

Teacher Directed

Negotiated Task/context

Learner Directed

Celebration of the Found

Teacher Directed

Negotiated Task/Context

Pupil Directed

'Celebration of the Understood' is where students have a specific task, need or problem, research relevant factors, apply or use their prior knowledge and found information to construct a solution. , At completion the learner then shares their solution, decisions and justifications thus sharing their understanding.

'Celebration of the Found' is where students research a topic, find information and present what they have found in some way shape or form. Traditionally this was in the form of projects or homework research sheets.
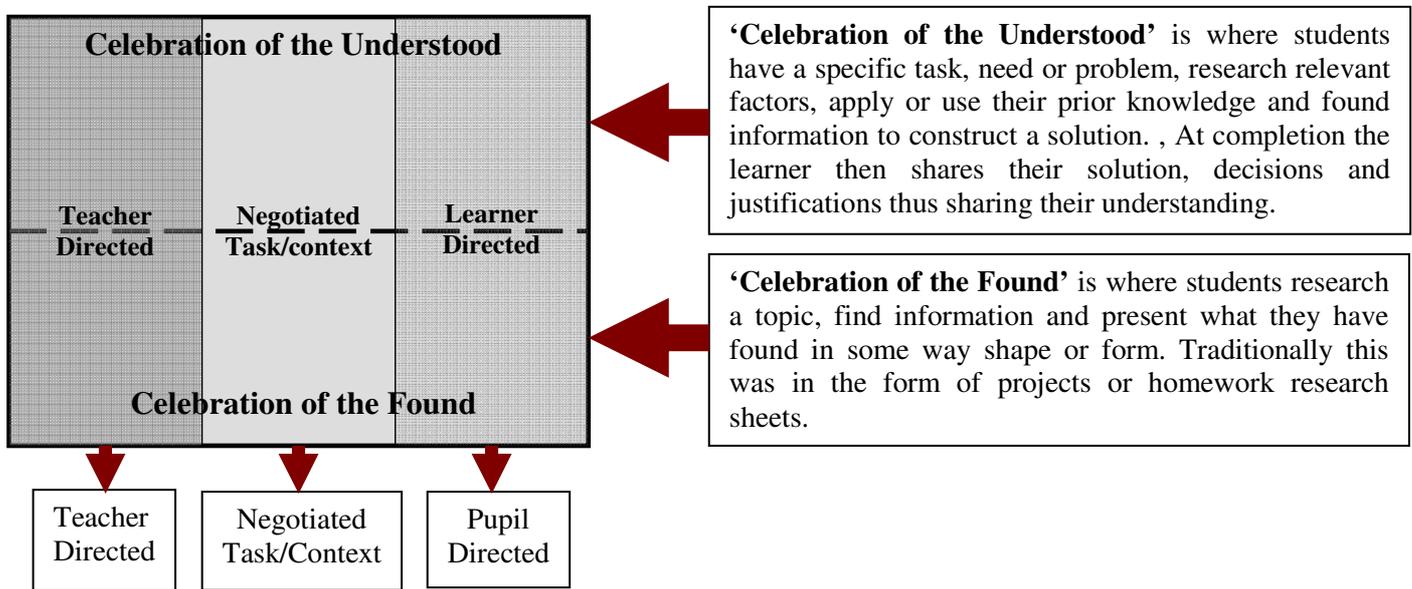
Diagram 1: the field of Inquiry Learning

The three vertical segments relate to how the task or context for the inquiry is chosen or set. All tasks will fall into one or other of the 'Celebration of Found' or 'Celebration of Understood' approaches. The task or context may be teacher directed, negotiated or pupil chosen.

While all approaches will fit into this construct, the models utilised vary in their construction as well. See the section on model Structures for further explanation.

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What Is Learning?

Before a school can really get to grips with inquiry learning it is important to clarify what you understand learning to be.

David Perkins identifies effective learning as when something is "retained, understood, able to be applied and can be transferred".

Retention:
This is the lowest form of learning. Real learning is much more than just the short or long term retention of information. Retention is linked with the word 'knowledge'.
Knowledge is about retaining stuff. Knowledge is the accumulation of information within the space between the ears.

Understanding and Application are inseparable partners.
Understanding is created through doing, and understanding improves the doing.
Understanding is built through application and understanding occurs within the spaces between people. Understanding occurs through application and through mind to mind contact. Understanding occurs when the learner has a relationship with the context.

Transference occurs when retention, understanding and skills have reached a point that enables me to form links from one context to another. This is the ultimate indicator of effective learning.

Learning is ultimately a process that creates change.
When I learn something there is a change to one or more of these things..

- World view
- Knowledge
- Understanding
- Belief
- Values
- Attitudes
- Behaviour
- Skill

Learning is when there is change (strengthening, weakening or alteration) to one or more of these.

Diagram 2 World View and learning
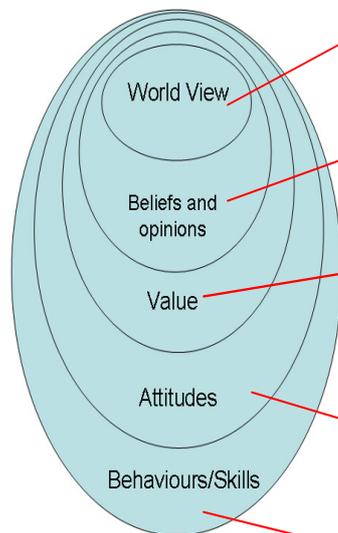
My world view is formed and shaped by my experiences, culture, knowledge and understanding

Beliefs and opinions are formed from our world view.
My beliefs are deeply held convictions
My opinions are lightly held beliefs.
To alter these requires a change in my world view

A value is the level of importance I attaché to something. What I value and the level of importance I attach to it is driven by my beliefs and opinions.
To alter one or more of my values requires a shift in belief and opinion.

Attitudes are a chooseable state of mind. And are determined by what I decide to value in any given situation. Ultimately attitudes are driven from what I value.

Behaviors are driven by my attitudes. My skills are evidenced through behavior and actions. My skill and behavior is the end result of all the above coming together. I act with integrity when there is a direct correlation between my beliefs, opinions, values, attitudes and behavior.

What Is Good Inquiry?

There is no definitive answer to this question, because ultimately 'good inquiry' is the inquiry learning approach that achieves your goal. If your goal is to raise student skills in library usage and the approach you utilise makes a measurable difference to student library skills, then it would be difficult to argue against your approach being 'good'.

At best I can only share what I believe are worthwhile goals for inquiry learning and outline an approach that works in terms of achieving those goals. In my opinion goals that target facilitating students towards independence as learners through the development of related learning, thinking, information literacy, social and technological skills are worthwhile.

To clarify this further, an explanation of the concept of 'independent learner' is necessary. An independent learner is not one who operates in a void uninhabited by other people. Far from it! The world of the independent learner is inhabited by many significant others. These

> "Independent Learning is that learning in which the learner, in conjunction with relevant others, can make the decisions necessary to meet the learner's own learning needs."
> (Kesten, 1987, p. 3)

are the people who allow the learner to bounce ideas and thoughts off them. These are those who challenge the learner's thinking and ask probing questions. These are the ones who encourage the learner when he/she is ready to quit. These are the ones who foster and fuel the learner's curiosity and ignite the spark of scepticism. These are the people who encourage the learner to think deeper and wider. These are the ones who help the learner find answers to questions. These significant others are the ones who, whether they are teacher, parents, peers or 'experts, fill the role of teacher. An independent learner is one who interacts effectively with significant others, allowing them to support and enhance the learning.

Effective inquiry learning is an approach to learning and teaching that supports learners in the acquisition and development of the skills that empower them to be independent learners. The approach does this by ensuring the student has access to relevant resources and develops a wide range of strategies to support their own learning and the learning of others.

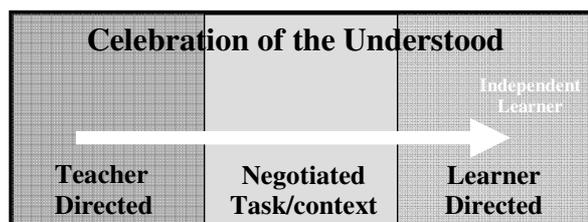| Celebration of the Understood		
		Independent Learner
Teacher Directed	Negotiated Task/context	Learner Directed

Diagram 3: Becoming an Independent Learner, a 4 to 13 year journey

Effective inquiry learning operates, in my view, in the segment where learners use and apply information to solve problems, create solutions and develop understanding. An independent learner operates in the right hand quadrant. The logical pathway to become an independent learner starts at teacher directed tasks, moves through negotiated tasks to learner directed tasks. This journey could take anywhere from 4 to 14 years, depending on the individual. It is important to realise that young students will also be developing their base literacy skills at the same time.
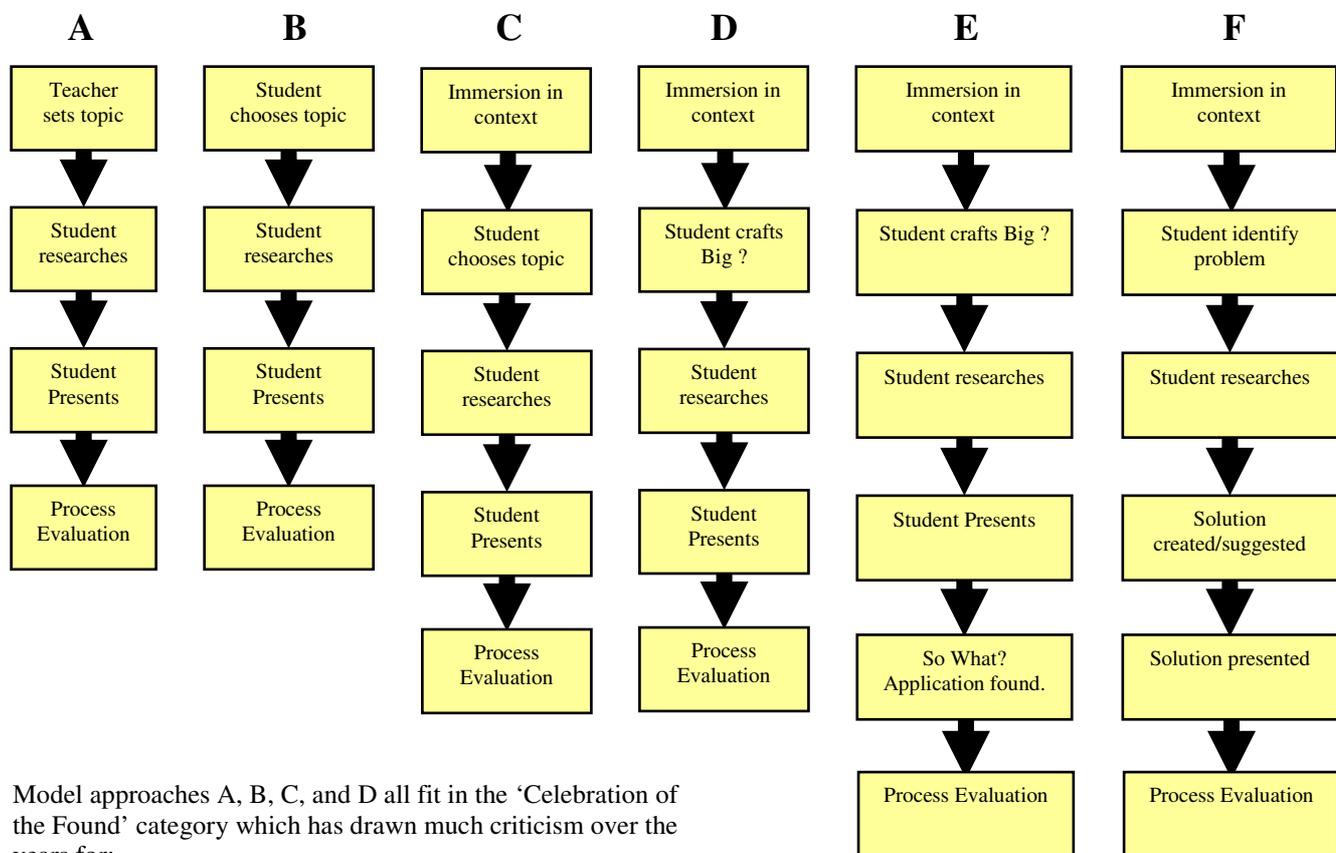
Kesten, C. *Independent Learning*, Saskatchewan Education, 1987

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Model Structures.

The world of inquiry learning is full of inquiry models. Over the years the number and types of models has been proliferating as people strive to construct models that fit with their beliefs and understandings. In New Zealand there also seems to be a move, amongst primary schools in particular, to develop their own school based model. The result often is schools using models that do not in reality support the goals they are aiming to achieve. Given the proliferation of models the best approach is to gain a clear understanding of what you are trying to achieve and then select an existing model that supports those end goals.

Each model contains a number of steps or stages.
There are some steps that are common to most models, such as 'creating questions to research', 'finding information', and 'evaluating the process'. There are six distinct common model structures. Each approach has possible weaknesses. The weaknesses have often led to the development of further models.

A	B	C	D	E	F
Teacher sets topic	Student chooses topic	Immersion in context	Immersion in context	Immersion in context	Immersion in context
Student researches	Student researches	Student chooses topic	Student crafts Big ?	Student crafts Big ?	Student identify problem
Student Presents	Student Presents	Student researches	Student researches	Student researches	Student researches
Process Evaluation	Process Evaluation	Student Presents	Student Presents	Student Presents	Solution created/suggested
		Process Evaluation	Process Evaluation	So What? Application found.	Solution presented
				Process Evaluation	Process Evaluation

Model approaches A, B, C, and D all fit in the 'Celebration of the Found' category which has drawn much criticism over the years for:

- swamping students in information
- cut and paste research
- plagiarism

Immersion was included in models C to D because of the difficulty students have in choosing an aspect to research within a context where they have little or no prior knowledge.

Model approaches E and F are an attempt to take a previous variant and modify it to include application of information. These models aim to move the student into the 'Celebration of the Understood quadrant. Model E tacks application on the end, but often the application is contrived and non-engaging as a result. Model F tries to identify the need early in the process so that research can actually target the need.

Diagram 4: Model structures

Criteria for choosing/designing an inquiry learning model

When schools move into implementing an inquiry learning approach they need to make a decision about which model or approach they will use. There are a number of standard approaches to this decision:

Some schools make their decision based on the knowledge and understanding of one of the staff members who have had some previous experience or contact with inquiry learning.
Some base their decision on the information of an advisor or consultant.
Some base their decision on what other schools in the local area are doing.
Some design their own model from scratch.

There are some very clear weaknesses and dangers present with these approaches which means that many schools have made poor and ill informed decisions.

The following criteria have been put together over the years I have been working with schools on inquiry learning and should be of help when schools are choosing or creating an inquiry learning model.

- The model is not linear, because learning is not a linear process
- prior knowledge is recognised and built on
- learners are scaffolded to ask relevant questions
- the model requires learners to use a range of sources
- the model facilitates learners to validate information
- the model allows for learner review to decide where to next
- the model requires learners to use rather than present information
- the model requires learners to share and justify decisions and thinking
- the model requires learners to evaluate and reflect on their thinking and learning skills within and after the process

Where Does SAUCE Fit?

SAUCE is a model specifically constructed to have learners operating within the "Celebration of the Understood" quadrant. The aim is to have students researching with an application and usage in mind. The model does not expect presentations of found material. It does require students to research with purpose then utilise new information knowledge and information to develop understanding and solutions.

Sauce is aimed specifically at the development of independence as learners and does this in two ways. Firstly it aims to scaffold students through a real life learning process. This means it does not rely on artificial immersion in a topic, rather accepts the fact that in real life we have problems, issues or needs that move us into learning mode. Often we go into learning with little or no prior knowledge. On this basis the approach intends to scaffold learners from little or no prior knowledge to a point of adequate understanding that enables them to meet the need or solve the problem. For instance in real life I may buy a property on the coast, decide to put in a garden, but have virtually no gardening knowledge. As an independent learner, a quality process should enable me to move from limited or no prior knowledge, through to a point of understanding, application and hopefully, even to a stage where I can transfer learning into other contexts. The SAUCE model is deliberately structured to accomplish this. There is also an expectation that teachers will use the model in a manner that starts students with teacher directed tasks and then moves them, over time, through negotiated tasks to pupil developed tasks. The expectation is that this will be a four to thirteen year process.
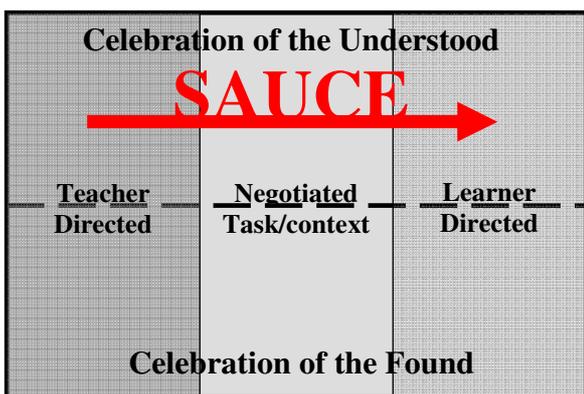

Diagram 4: SAUCE in the Inquiry Learning field.

In terms of how the model is used there is recognition that young learners will be at the early stages of literacy development and as such will not be capable of drawing much relevant or useful information from textual resources. Teachers will craft inquiry activities , at this level, that require students to draw the bulk of their information from visual and people based sources. At this level students will be learning literacy based skills, thinking skills, social skills, and questioning skills with teacher support. They will be laying the foundations of sound inquiry.

As literacy skills develop students will be accessing increasing amounts of information from text based resources, while still utilising visual and human sources. As students develop their skills they will be expected to move from teacher directed tasks to negotiated tasks. It has to be realised that the development of well crafted learning tasks is not a skill learners will instantly have. The SAUCE model allows for this in that the children will experience a range of well designed teacher directed tasks as models before they are led into negotiating and developing their own.

The SAUCE model adds yet another broad construct to the types of inquiry structures. The purpose to address many of the criticisms levelled against inquiry learning in the past and to realistically move student towards independence while developing complex skills over time.
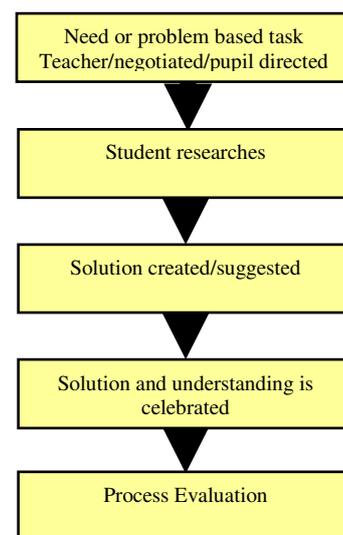

Diagram 5: SAUCE basics

SAUCE and Information Literacy

Though Doyle's definition is simple and powerful, it still contains a problem because the phrase 'use information' can easily be interpreted to have students working at either 'celebration of found' or 'celebration of understood' levels. In order to avoid this confusion I have enlarged on the foundation provided by Doyle and propose that to be information literate is to...

- recognize an information need
- be able to locate, access, acquire, comprehend, analyse and critique relevant information
- utilise information to make valid, informed decisions
- communicate decisions, ideas, outcomes and opinions clearly with validation where necessary.

The purpose of this model is to:

- Provide learners the tools to effectively unlock and utilise information in a manner that enables them to become proficient in a wide range of thinking, learning, literacy, technical, and information skills.

- Provide learners a framework to guide them into effective research and the acquisition of relevant and valid information that is then used in co-operative problem solving.

- Provide teachers a framework to guide them in leading students into higher order thinking skills

- Provide a research process where assessment and evaluation are integral aspects.

- Provide a research process that demonstrates and encourages the non-linear and recursive nature of quality research.

- Provide a framework that leads learners to increasing independence as learners.

- Provide a process that allows integration of ICT, Information Literacy and Core Competencies across the curriculum.
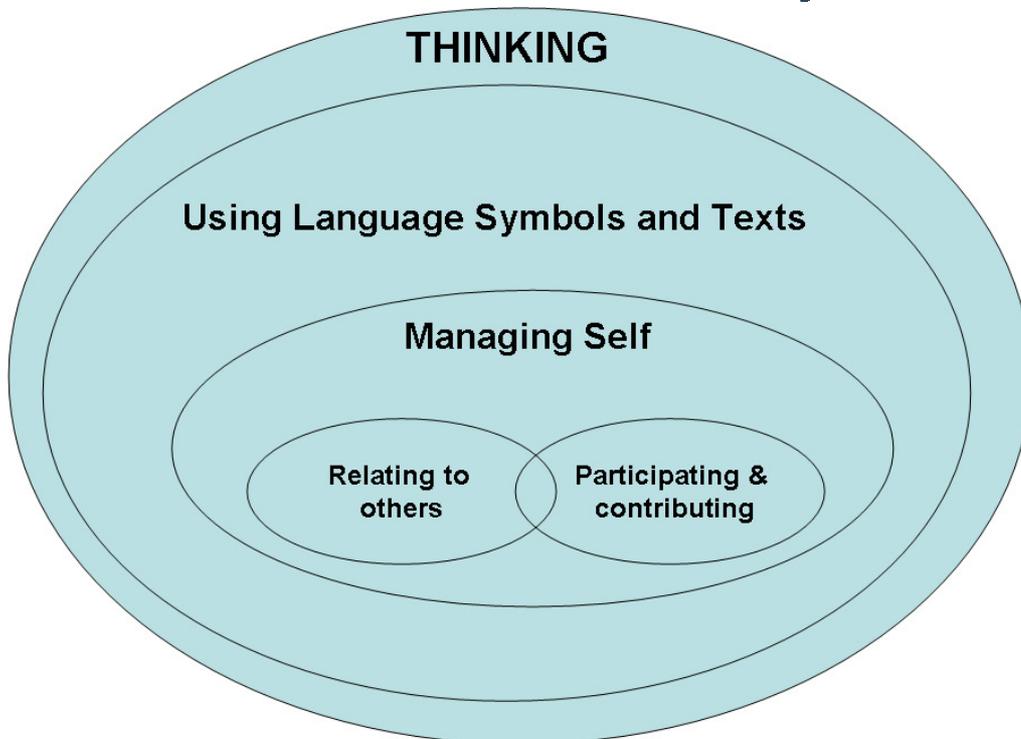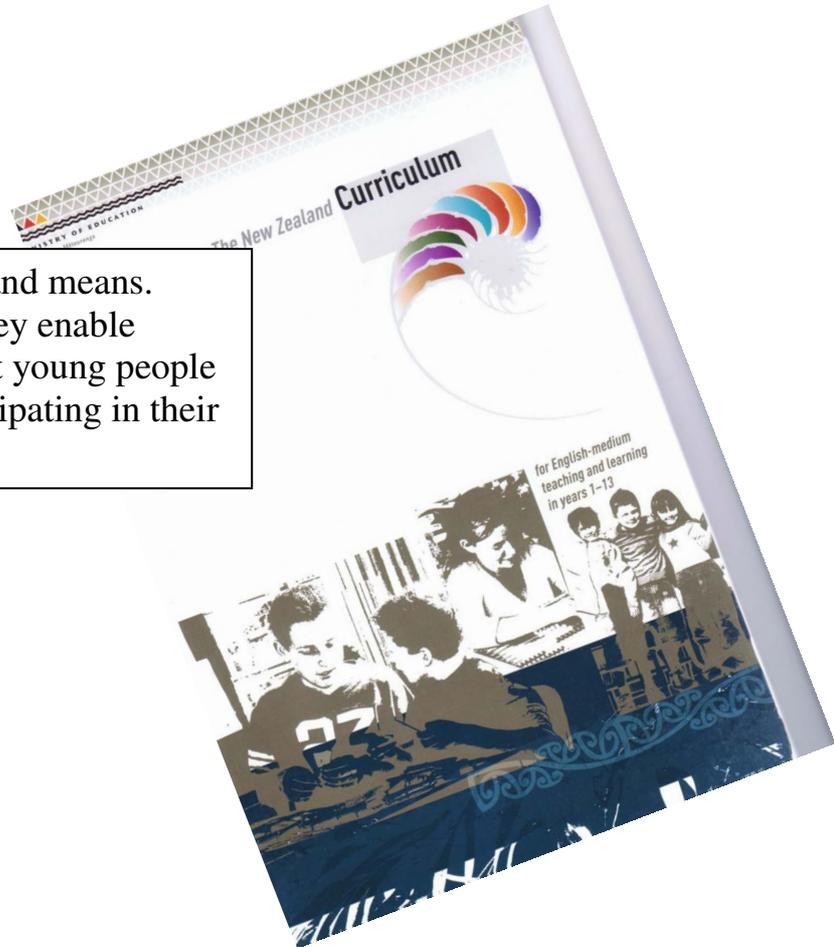
C Doyle, C. S. (1994 Information literacy in an information society: A concept for the information age.

ERIC Document IR - 97. Syracuse University: ERIC Clearinghouse on Information & Technology.

Key Competencies: (The New Zealand Curriculum, Ministry Of Education, 2007, P12)

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Inquiry learning and the competencies

"The key competencies are both end and means.
They are a focus for learning – and they enable
learning. They are the capabilities that young people
need for growing, working, and participating in their
communities and society." P38

THINKING

Using Language Symbols and Texts

Managing Self

Relating to others

Participating & contributing

Collaborative Inquiry (where students work together in groups) is a perfect environment for the development of the competencies.

Inquiry and Assessment

If your major assessment focus is on the retention of subject based content then there is no reason for implementing an inquiry based approach to learning and teaching.

However if your school has a focus on moving students towards being effective learners, and has identified a range of specific learning and thinking skills (based on the competencies) then it makes sense that your assessment will focus on ascertaining student's development in the specified skills.

The following are some examples of rubrics drawn up by schools that target specific skills.
It is to be noted that for most schools these are initial drafts that are open to revision as they go further down this track.

Clarifying relevant contextual vocabulary	
Stage 4	I can independently use a range of strategies to seek understanding of vocabulary in context, and seek to ensure that all involved share a common understanding
Stage 3	I can independently use a range of strategies to seek understanding of the meaning of vocabulary in context
Stage 2	I seek to understand the meaning of vocabulary in context by asking questions to clarify definitions
Stage 1	I can use some specific vocabulary correctly within the context

Creating justifiable informed decisions considering a range of possible options	
Stage 4	I can generate a range of relevant options with identified short- and long-term consequences I can justify my decision including consideration of the supporting information, views and needs of others
Stage 3	I can generate a range of relevant options I can identify one or more short term consequences I can justify my decision based on supporting information and possible outcomes
Stage 2	I can make a simple, relevant decision identifying at least one short term consequence and justify my decision
Stage 1	I can make a simple decision or form an opinion that is relevant

Ultimately your assessment should be about
identifying the progress being made by students towards identified and clearly expressed goals
identifying the effectiveness of your curriculum and delivery in terms of helping students to achieve those goals.