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A strategy that has been around for many years is Resource Based Learning (Norman Beswick 1977). This is a methodology that allows students to learn from their own interaction with information resources. "Such active learning provides a means by which teachers are able to tailor information resources, learning activities, the location of those activities and expected learning outcomes to the needs and abilities of each child.

In particular, these programmes provide students with opportunities to:

- develop the capacity to recognise a need for information, to know how and where to find it from a range of sources, and how to select, organise and communicate it to others;
- acquire the skills required to analyse, interpret, synthesise and organise information as well as the language and communication skills of reading, writing, viewing, speaking and listening;
- develop as critical thinkers and creative problem solvers while building on a dynamic view of themselves as confident and discerning information users;
- extend their cultural understandings and their information competencies in increasingly complex contexts, using a range of information sources, formats and technologies as an integral part of their learning;
- use resources including literature, to further their personal growth".

(Source: Australian School Library Association and Australian Library and Information Association, Learning for the future: developing information services in Australian schools, Curriculum Corporation, 1993)

What has happened though, is that quite often this methodology has been reduced to the "Do China and I'll see you in three weeks time" syndrome by busy teachers who have misunderstood the necessity for ongoing support and clear essential questions which discourage plagiarism, and, in the case of the Internet simple copy and paste. Jamie McKenzie <http://fno.org>, cited frequently in these articles, is a great proponent for developing thinking skills. Indeed his Questioning Toolkit <http://questioning.org/Q7/toolkit.html> does just that as it ensures that question types, so enjoyed by journalists, are not merely 'what' type questions but how, where, when, who and perhaps most importantly why (Rudyard Kipling in I Keep Six Honest Serving Men from the Elephant's Child).

Engaging Students in Wrestling with Authentic Issues and Challenges from the Community

Measuring Up to the Challenge

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Jamie McKenzie also speaks about Grazing the Net <http://www.fno.org/text/grazing.html> in which he speaks of scaffolded learning, in particular a wide range of projects that all require higher level thinking, problem solving and fresh thought. "Supportive structures that help guarantee that learner time will be spent productively. There will be little wandering about or "surfing." Teachers can rest assured that learners will be challenged and motivated. They will be directed toward reliable and developmentally appropriate Web resources. Blue Web'n is a PacBell site offering a comprehensive collection of research projects organized into subject areas and grade levels <http://www.kn.pacbell.com/wired/bluwebn/>"

WebQuests <http://webquest.org/index.php> first developed by Bernie Dodge at San Diego State University is a PacBell funded site which offers challenging research projects along with online lessons to show teachers how they might build their own projects if they wish. Webquests require that students work as teams to develop solutions to problems and responses to challenges. As more and

"I think therefore I am"

Rene Descartes (1596-1650)

How can the Internet encourage thinking skills?

The South African National Curriculum is based on a sound pedagogy which encourages learners to think about what they are learning. Developing life long learners who have retained the spirit of enquiry is a basic tenet of the system. The curriculum is based on setting standards for observable measurable outcomes, Outcomes Based Education or OBE. The ability to identify and solve problems and make decisions using critical and creative thinking (the first Critical Outcome) is reflected in Blooms Taxonomy viz a viz knowledge, comprehension, application, analysis, synthesis, evaluation and reporting. This indicates that a learner is taken into the realm of higher order thinking as opposed to the retention of facts for the mere purpose of passing examinations. At the same time, to quote from Centre for Education Reform in the US (May 1999), "The learning of facts is the essential first step to thinking critically. Also, "Higher level thinking' is virtually impossible without a foundation of basic skills and knowledge." This from Ellen Hoerle, member of the Minnesota Academics Standard Committee for Math, Minneapolis Star Tribune, February 14, 2004

more teachers find the approach appealing, the collection of projects expands and deepens in quality.

The screenshot shows the WebQuest.Org website with a navigation menu on the left, a central 'Welcome!' message, and a 'Minds We Like' section on the right. The main content area features a 'What is a WebQuest?' article dated October 22, 2008.

Locally, the Microsoft Partners in Learning Programme has a module of Webquests that are designed around our curriculum

These are available at the SchoolNet South Africa website <http://www.school.za> go to <http://www.school.za/PILP/themes/index.htm> or http://www.school.za/atwork/pil_webquest.htm

The screenshot shows the SchoolNet South Africa website with a navigation menu on the left and a 'Latest news' section on the right. The main content area features an article about the 'Microsoft Worldwide Innovative Teachers Awards 2006 - Hong Kong' dated November 6, 2006.

There are other luminaries in the field of teaching thinking and a couple of these are Edward de Bono (Six Thinking Hats) and Tony Buzan, well known for using Mind Mapping (visual stimulus).

The screenshot shows the Buzan World website with a navigation menu on the left and a 'Home' section on the right. The main content area features a 'BuzanCentres' section with a 'Find your Buzan Centres and nearest Buzan Licensed Instructor' link.

There is Problem-Based Learning (PBL) takes this a step further in that learners are given authentic open ended problems to solve. This requires that the problem is set

within context of the local environment and not some hypothetical situation which will never be realised. The process of finding solutions requires group work and collaboration as well as other skills as specified in the critical outcomes including problem solving. PBL can also enhance content knowledge, foster communication and develop independent learning

Flexible Learning takes advantage of current technologies, in particularly communication platforms provided by Web 2.0. In Chaotic Learning: the learning style of the "Net" generation Australian author and educator Mal Lee explicitly mentions self-learning and constructivism as being the hall marks of 21st century learners. In this way the thinking skills are developed as there is a willingness to push boundaries.

In the Partnership for 21st Century Skills <http://www.21stcenturyskills.org> the following are identified and are clearly articulated in the outcomes of the South African curriculum.

- Creativity & Innovation
 - demonstrating originality and inventiveness in work
 - developing, implementing and communicating new ideas to others
 - being open and responsive to new and diverse perspectives
 - acting on creative ideas to make a tangible and useful contribution to the domain in which the innovation occurs
- Critical Thinking & Problem Solving
 - exercising sound reasoning in understanding
 - making complex choices and decisions
 - understanding the interconnections among systems
 - identifying and asking significant questions that clarify various points of view and lead to better solutions
 - framing, analysing and synthesising information in order to solve problems and answer questions
- Communication & Collaboration
 - articulating thoughts and ideas clearly and effectively through speaking and writing
 - demonstrating ability to work effectively with diverse teams
 - exercising flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
 - assuming shared responsibility for collaborative work

In conclusion, the path of educational theory is a winding one but the methodologies all point toward enabling learners to think independently. LIASA published a document on the research cycle and information skills in 2001 and this is available at <http://www.thutong.org.za/LearningSpaces/ChildrenandYouthLiteracy.aspx>. The emphasis is on creativity and problem solving and we in South Africa need to ensure that our youth is equipped to manage information, use it to solve problems and become life long learners.