

Journal of Information Literacy

ISSN 1750-5968

Volume 2 Issue 2

December 2008

Article

Abdullah, A. 2008. Building an information literate school community: approaches to inculcate information literacy in secondary school students. *Journal of Information Literacy*, 2(2), <http://jil.lboro.ac.uk/ojs/index.php/JIL/article/view/RA-V2-I2-2008-3>

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Building an information literate school community: approaches to inculcate information literacy in secondary school students

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Abstract

Purpose: This paper considers the concept of an information literate school community (ILSC) and approaches to information literacy instruction appropriate to secondary schools in Malaysia.

Methodology: The paper examines the literature to determine the conditions that need to be in place in order to create an ILSC, and benchmarks for determining how well a school is progressing towards an ILSC. Different approaches to IL education are outlined and a case study of project based learning in the history curriculum is highlighted.

Findings: The project based learning approach in the history curriculum for 13-15 year olds does not ensure good information literacy skills if library instruction is not embedded. A digital library of the students' history projects is being developed to encourage improvements in students' work.

Originality: This paper offers an insight into how Malaysian schools approach the task of developing student information literacy and their progress towards becoming ILSC.

Keywords

Information literacy; Information Literate School Community; Resource-based learning; Project-based learning; Personalized Coaching

1. Introduction

In recent years information literacy (IL) has been associated with information practices and critical thinking in the ICT environment; it is also seen as pivotal to the pursuit of lifelong learning, and central to achieving both personal empowerment and economic development (Bruce, 2002). Educators and librarians will be aware that the way students research and discover information nowadays has changed tremendously compared to when they were children. Students now have more ways to find information for their schoolwork and their daily lives. With so many different resources available, students today need special skills – the skills of information literacy – to seek out information and to understand, evaluate, and use information effectively (ACRL 2000).

As IL has become a crucial skill in the current knowledge society, schools worldwide are implementing a holistic approach to IL, and are embedding IL within teaching units in the schools. There seem to have been serious attempts by schools to demonstrate a journey towards becoming an information literate school community (ILSC) (Henri et al. 2002). A school can be regarded as an ILSC if the school community places a high priority, such as in policy, benchmarking, funding, and evaluation, on

the pursuit of teacher and student mastery of the processes of becoming informed (Henri 2000). Effective collaboration is needed to ensure that both teachers and teacher librarians are aiming towards the same shared vision to equip students with IL skills. To achieve this level of collaboration teacher and teacher librarians need to develop an information literate culture within their own school environment, and this requires personal commitment, support from the school management and changes in working practice to enable flexibility in time and curriculum (Williams and Wavell 2006a)

How does a school know when it deserves to be called an information literate school community and has developed an information literate culture? McKenzie (1998) paints a picture of this community, its members and the activities they engage in. She indicates that the school community can be described as an ILSC when the school provides ongoing support and rich opportunities for students to develop thinking and information skills, and has a programme that is dedicated to “problem-solving, decision-making, exploration and the creation of new ideas.” The school will have curriculum documents that include clear statements regarding the information literacy expectations appropriate for each grade level. The teachers in an ILSC conduct direct IL instruction and facilitate more active student participation and inquiry. According to McKenzie (1998), an ILSC has both teachers and students who are “developing efficient navigation skills and sharpening search skills on their way to the most relevant sources; honing selection skills, and they know how to separate the reliable from the unreliable source; extending questioning skills and they know how and when to employ different types of questions; acquiring additional planning and organizational skills; improving in their ability to interpret information, they are not merely consumer of information, but they also create new knowledge; and combining deep thinking and reading with a wide ranging search for relevant information”.

In many secondary schools in Malaysia, the concept of IL is now attracting greater attention. How do schools in Malaysia fare as ILSCs? And who is responsible for achieving all this? Realistically there are people far more influential than the teacher and teacher librarians, such as the school principal, or further up the chain, like the Department of Education or the State Educational Resource Centre. What responsibility do they have for creating the ILSC? McKenzie (1998) indicates that the following should be in place in beginning the journey towards an ILSC:

- a) Curriculum documents which clearly indicate clear statements regarding the information literacy expectations that are developmentally appropriate for each grade level
- b) Schools operating as strong learning communities, characterised by distributed ICTs and underpinned by learning models that incorporate information and ICT literacy
- c) Qualified teacher librarians who are able to apply their professional knowledge and expertise in teaching information literacy skills directly to students and in providing professional development for their classroom colleagues in this area
- d) School libraries that respond quickly, and as effectively as resourcing will permit, in providing online services. The school library not only makes online information freely accessible to all students, but also makes teaching them how to access and use that information effectively and ethically a high priority.

Appendix A delineates the benchmarks used to determine how well a school is progressing towards an ILSC.

2. Information Literacy Education

IL education has been discussed extensively since the late 1980s, and many programmes have emerged at all educational levels. Teaching IL to students does not merely involve library or bibliographic instruction (library skills) or the ability to use different information sources effectively (information skills). It also includes teaching critical and analytical thinking skills regarding the use of information (Kasowitz-Scheer & Pasqualoni 2002), as well as the ability to generate new ideas from current information and prior knowledge. For students, the key to becoming independent learners and future knowledge workers lies in being information literate. However, existing IL education approaches have not always been very successful in ensuring that students learn and apply IL competencies effectively, and are able to show mastery of the learning and research process (Mokhtar et al. 2007a). Students have been found to have difficulty in applying learned IL skills in their academic work or real life situations (Elmborg, 2003; Harley 2001). As such, IL education that is built on pedagogical theories and approaches, such as instructional scaffolding and mediated learning (Mokhtar et al. 2007a), is necessary as it would facilitate students' learning and understanding of IL competencies, which in turn leads to better application of those competencies in their schoolwork.

Numerous and diverse initiatives and strategies to teach IL have been implemented in schools in the US, Australia, New Zealand, Canada, South Africa, the UK and throughout Europe. Malaysia is no exception; secondary schools in Malaysia have been equipped with current ICT infrastructures that would enable the students to develop learning opportunities by exploiting these modern tools. However, furnishing schools with modern and advanced technological infrastructure does not necessarily mean that students and teachers are competent enough to effectively utilise those tools as information literate individuals. Both students and teachers would only be able to fully benefit from their learning when IL instruction, grounded in sound and effective pedagogy, is seamlessly intertwined with the use of technology such as the Internet (Gersh 2000) and digital libraries (Abdullah et al. 2006).

At the secondary school level, a number of models, such as those developed by Kuhlthau (1993) and Eisenberg and Berkovitz (1990), have been proposed for teachers and teacher librarians to consider when implementing an information literacy programme in their school. These models, which are based on extensive research, have provided a useful basis for teachers and teacher librarians to develop IL instruction initiatives to ensure that students are equipped with a suite of generic and adaptable competencies.

Building an ILSC is complex and the role of the teacher-librarian to apply IL instruction within a curriculum that has had an information literacy framework imposed upon it cannot be underestimated. In Malaysia, aspects of information literacy as understood by the information profession are embedded in the secondary school curricula, and schools adopt different approaches to teach IL. The common approach in many schools concerns the role of libraries, which are providing more services through the Internet. Teacher librarians are supporting IL by teaching students how to use the available technology. In some schools, teacher librarians and teachers are working together to include technology into the classrooms. This paper will highlight three approaches commonly found in the literature of IL education.

2.1 Teaching Information Literacy as a Process

Application of IL models as a replacement for the teaching of traditional library skills is beginning to make inroads among teacher librarians in Malaysia (Razali et al. 2006). Once models are internalized in the thinking of the teacher librarians, the practical problem is how to apply these models and create intervention strategies in teaching and learning. Numerous techniques have been suggested including

direct teaching of the models to students and "just in time" instruction that focuses the teaching in the form of mini-lessons at the time students need a particular information strategy. Interventions include:

- (a) Integrating information skills into classroom instruction – this involves scheduling students into the school libraries, and subject teachers instruct, guide, coach, and assess students in using information sources.
- (b) Teaching the Big Six – This involves standalone information literacy classes using The Big Six Skills of Eisenberg and Berkowitz.
- (c) Teaching text structure – This is aimed at “reading in the content areas” and cover skills such as using format features and organizational aids (title pages, tables of contents, indexes, etc.); using internal text structure (headings and subheadings, lists, text boxes, graphs, tables, marginal notes); skimming and scanning techniques; identifying the main idea; outlining and note-taking; and being a critical reader
- (d) Fostering habits of mind and the inquiry process – this involves teachers focusing students on the inquiry process with questions such as:
 - How do you know what you know? What's the evidence: Is it credible?
 - What viewpoint are you hearing, seeing, reading? Who is the author? Where is she/he standing? What are his/her intentions?
 - How are things connected to each other? How does 'it' fit in? Where have you heard or seen this before?
 - What if...? Supposing that...? Can you imagine alternatives?
 - What difference does it make?

Monitoring students' behaviour during the information seeking process is essential to ensure that students have the following skills:

- Searching for information: students must have the ability to interpret and construct search statements
- Evaluating information: students must be capable of locating information and critical of the content they find. They must be taught on how to write annotations for the sources they discovered.
- Paraphrasing or synthesizing the ideas they find: Students must be capable of extracting information from various sources and transcribe that information into their project work. Teachers must remind students not to plagiarize. Teaching students how to extract information and do it ethically is still a challenge as is helping teachers and students frame their inquiry so that synthesis rather than regurgitation of ideas is the central focus of the quest.

2.2 Resource or Project-based Learning (PBL)

IL is conceptually closely linked to terms like "active learning", "problem-based learning", "student-centered learning", "lifelong learning", and "learning to learn" (Roes 2001). One way that Malaysian secondary schools are promoting IL is through resource or project-based learning (PBL) (Chan 2002), which places student projects at the centre of the curriculum and encourages students to use a variety of technologies to find the information they need. Students produce products such as portfolios, learning and research logs, presentations, and papers, that are evaluated by their teachers (Plotnick 1999; AASL 2000). Humes (1999) and Plotnick (1999) argue that many students learn better from this kind of active involvement than they would from classroom lectures and textbooks. This approach to inculcate IL is connected to the constructivist notion of learning theory (Stripling 1995).

In PBL, students interpret, analyze, synthesize, generate, and evaluate information about a topic, collaborate with others, and report findings (Blumenfeld et al. 1991; Barron 1998). Through the exploration of a theme, students develop a more in-depth, applied understanding of an academic content area, philosophical issue, or social problem. PBL is especially effective when supported by

educational technology (Blumenfeld et al. 1991; Coley et al. 1996; Means and Olson 1997). Research has also shown the approach to be effective in enhancing student motivation and fostering higher order thinking skills, especially when supported by Internet technology (Ryser et al. 1995; Grant 2002; Sidman-Taveau and Milner-Bolotin 2001). A full complement of Internet tools may help to meet the information needs of these learners, and the electronic environment using tools such as web portals and digital libraries have the capability to support students in these PBL activities.

2.2.1 How Information Literacy can be entrenched in Project-Based Learning: The KST Context

The writer presents a proof-concept initiative to show how IL can be inculcated in PBL, using ICT or the digital information environment. To ascertain the requirements and students' reception to a digital library for a school project, the writer conducted a survey on 397 secondary school students conducting school-based projects along with interviews with six History subject teachers (Abdullah 2007). History was chosen as the domain of the digital library test-bed, based on the same survey findings that indicated the students (n=397) mainly use Internet resources to get information for their History project (75.5%, 299). The subject of History is compulsory for all secondary students (ages 13-17) in the Malaysian secondary school integrated curriculum. The History curriculum for lower secondary (ages 13-15) emphasizes knowledge of history of the Malaysian nation and the inculcation of values that help build the Malaysian spirit and identity. The learning of local history is also emphasized at this lower secondary level in the form of school-based project called "Local History Study" (*Kajian Sejarah Tempatan* - KST). Students have to conduct a study focusing on various aspects of historical interest at the local level. The purpose of the project is to give students experience conducting research, expose students to information searching, gathering and analyzing skills, as well as to instill students' interest towards the history subject.

The main importance placed by the KST in the learning context of the Malaysian Secondary School Curriculum on History is in line with IL practices "to develop research and learning skills" (Abd Rahim 2000). The six teachers interviewed in the study indicated that students are given freedom and responsibility in choosing topics for their KST projects in the hope that they will gain an increased understanding of the information seeking processes by taking a more active role in inquiry to develop understanding of particular research and learning skills. During data-gathering, the writer was mostly concerned to answer the following questions: *What are the sources students use to obtain information? How do students conduct research in unfamiliar content areas? What are the unexpected problems students face in getting the information for their project? Do students engage in high-level synthesis and transformation between presentation forms, or do students simply copy and assemble information from different sources?* Document analysis of 30 students' projects shows that most reports are mere recitation of information; contents, especially pictures and illustrations, are either not cited, or cited inaccurately, while some reports have inaccurate information. This was also supported by teachers who indicated that difficulties in getting information from various resources leads to the presentation of reports that are "stereotype", and that very few students can really produce reports that fulfill the objective of history thinking skills (Abdullah 2007).

The survey indicates that a high proportion of students feel comfortable with digital resources, use them substantially, and are relatively well equipped to find these resources. The students do solitary information seeking, have spontaneous interactions with other people such as parents, siblings and friends, and work with information in a group. However, a picture of the naivety of students' information seeking process emerged through the empirical study. Student internet explorations often are premature. In fact, they may grossly underestimate the research process, often forgetting the human side of the information picture: the planning, the processing, the thinking; the skills that we label *information literacy*. Teachers interviewed indicated that their students may not even be aware of IL, as information skills work has not been formally incorporated in the school curriculum. Although students have been taught library skills, the learning activities are focused on finding and gathering

information. Important issues such as refining the question, synthesizing and evaluating and information, are often neglected. Teachers interviewed indicated that the entire research activity is a cyclical process, and should be about more than simply gathering information, but should encompass “posing and identifying the question, exploring available information, coming back to refine the question, gathering and evaluating further information, and synthesizing, using and presenting it” (Malaysia, Ministry of Education, 2006; Abd Rahim 2000).

2.2.2 Fostering information literacy practices through a digital library of students’ projects

Assessing the problems encountered by students in conducting their KST school-based projects, as had been highlighted by the students and teachers in the sample, formulates a new model for accessing, producing and sharing resources, as well as to serve students information needs in conducting research projects. As a result, a collaborative digital library for school projects, which enables management, creation, processing, searching and browsing of digital documents and objects was designed and developed to meet the needs of the stakeholders (Abdullah 2007). In the implementation of this digital library project, the use of the online resources would be an integral part of History PBL activities. Students should be enabled to access digital resources, create and publish their own documents in the digital library or other electronic environment and share them with others. As students are allowed to create their History project report in electronic format, they may also submit their report electronically and be the content developers of the digital library. Though historically, project reports were written and submitted in paper or scrap-book form, the digital library may move the student community towards an emerging genre of digital resources as teachers have been allowing students to word-process their report. Thus, it is more and more common for students to prepare their project report with a computer. Reports that are submitted in the form of scrapbooks could be digitized and published in the “space” allocated for participating schools. With respect to end user access using the digital library, they may search the contents, retrieve collections of search results, and display the contents of result items consisting of multiple media resources. Findings regarding students’ and teachers’ reception of the digital library are encouraging (Abdullah et al. 2006). Figure 1 shows the implementation of the digital library which is consistent with the current implementation and evaluation of History projects (Malaysia, Ministry of Education, 2006), and will make the creation of information literate students feasible. The digital library in this work could provide a place for students to collaborate with others and present their research project, with the intended benefits that the project work would then be more meaningful to the students, and when given a chance to publish for the right audiences, students would produce higher quality products.

While IL skills may be taught in Malaysian secondary schools or school libraries, they can be practiced and fortified through PBL and using technologies. For example, the digital library of students’ projects supports specific information behaviors that underpin research and learning such as information seeking, browsing, encountering, foraging, sharing, gathering, filtering, and using. To demonstrate this, the writer has been experimenting with the implementation of an integrated and embedded IL model based on Eisenberg and Berkowitz’ Big 6 Model (Eisenberg 2001). This model for information problem-solving has been embraced as it has a resonance with the objectives of the KST’s PBL approach and the digital library design process model, and uses similar and therefore familiar terminology. This information problem-solving model is used in thousands of K-12 schools, higher education institutions, and corporate and adult training programs, and is applicable whenever people need and use information. The Big 6 integrates information search and usage skills along with technology tools in a systematic process to find, use, apply, and evaluate information to specific needs and tasks. The model encompasses six stages namely task definition, information seeking strategies, location of access, use of information, synthesis and evaluation. The outcome of this work shows that the digital library has various features to support IL and position it in the context of implementing The Big 6 which integrates information search and use skills along with technology tools in a systematic

process to find, use, apply, and evaluate information to specific needs and tasks. Table 1 presents the digital library features summarized in association with the IL dimensions in the Big Six. The digital library can contribute to student empowerment in information literacy practices, through collaboratively building the digital library resources. Empowerment provides students with the necessary skills to find and use information they need for school, study and leisure, and equips them with transferable skills which they can use for a range of information retrieval and usage tasks, enabling them to cope with the information age. In the context of the History project, the various digital library features could support the students in their tasks. However, it is emphasized that the students engage in their own development of a generic set of IL skills, and these skills can be practiced and fortified using the collaborative digital library. However, conducting an empirical study to prove that the digital library provides benefits in terms of promoting IL based on the problem-based learning is worthy of further investigation.

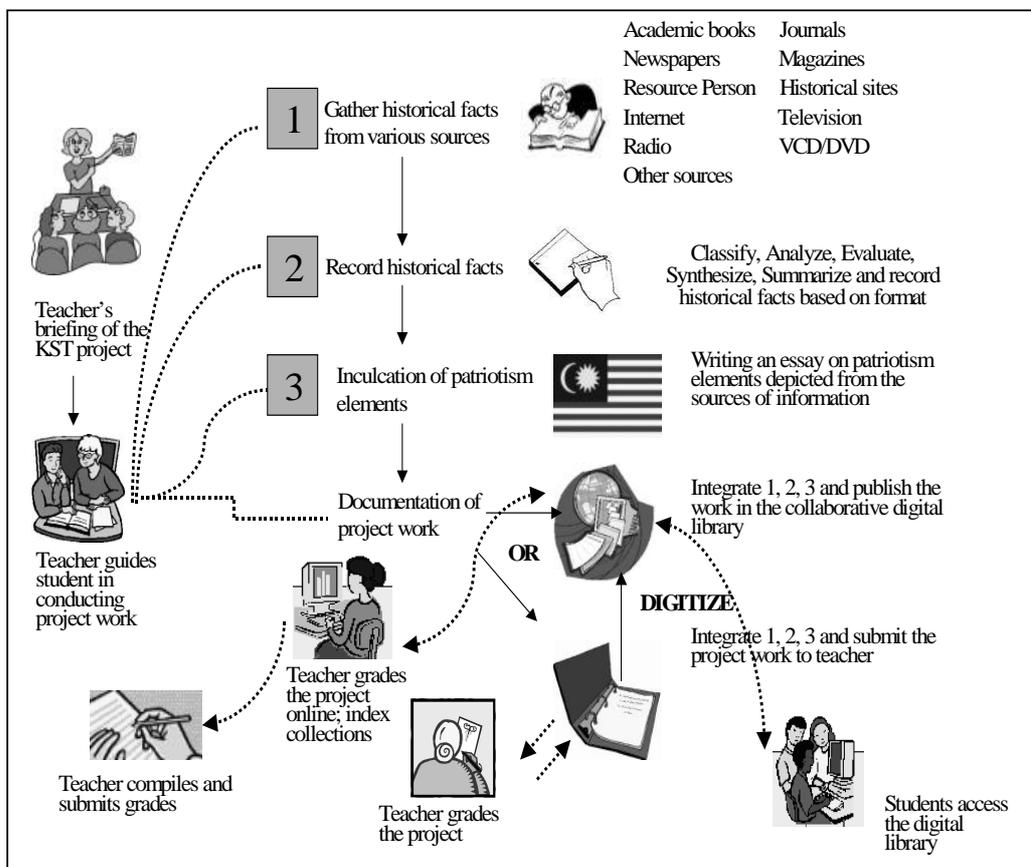


Figure 1: Implementation of a Digital Library of Students History Project to Inculcate IL Skills (Abdullah 2007)

Table 1: Big Six IL Dimensions Mapped With the Digital Library Features

IL Dimensions in Big Six	How the digital library facilitates the IL dimensions
<p>Task definition Determine exactly what the information problem is and then to determine the specific information needed to solve the problem.</p>	<p>Students will be able to use e-mail or discussion board to generate topics and problems, communicate regarding tasks and information problems, either with teachers, or among group of students.</p>
<p>Information Seeking Strategies This dimension of IL refers largely to students' level of ability to identify and find all possible sources, interpret the information and select the best sources</p>	<p>Students may perform simple search. Students can learn the advance use of search tools, mainly in the capacity to narrow and revise searches to better specify what they want</p>
<p>Location of Access After students determine their plan for information seeking, they must locate information from a variety of resources and access specific information in those resources</p>	<p>Students will be able to locate the relevant information as related resources are hyperlinked to one another using relation and collection metadata, which define the relationship between a resource and other targeted resources. Students may select the resources using appropriate selection criteria, such as relevance, accuracy, authority, and audience level, as described by the metadata accompanying the resource. Students can consult teachers, view other students' exemplary work, share information through discussion board by copying URLs into messages to help a friend access a recommended web site.</p>
<p>Use of Information At this stage, students need to identify resources that are useful, information that fits the selected focus and information that comes from valid and documented sources. It is imperative that students understand the concept of plagiarism, copyright, and citation guidelines as they relate to electronic resources since it is so easy to "copy" or download graphics from the Internet or to cut and paste text from an electronic source.</p>	<p>Students view, download, decompress and open documents and files from the system or various Internet websites and portals. It is imperative that students understand the concept of plagiarism, copyright, and citation guidelines as they relate to electronic resources since it is so easy to "copy" or download graphics from the Internet or to cut and paste text from an electronic source. Use of information is much easier especially with digital libraries as each resource in digital library has rights management description. Students may learn to use a citation generator to properly cite and credit those sources.</p>
<p>Synthesis In synthesis, students organize all the information they have collected from multiple sources and integrate it with their prior knowledge and experiences. This is the stage where students decide how to present their report, how will the final product look and what medium should be used</p>	<p>Students may use authoring tools or template provided in the digital library to generate their report.</p>
<p>Evaluation Evaluation focuses on effectiveness or how well the final product matches the original task. Evaluation also looks at efficiency in the information problem solving process. Students need to ask</p>	<p>Evaluation requires the students to apply the same high standards to his/her own work that were applied to the resources used or the samples of good quality reports. Both format and content should be critiqued. Reports can still be edited and revised before the final submission to the teachers. They were more</p>

themselves, "How can I do better?" At this stage in the process, there is still time for the students to examine and refine their final product	amenable to making revisions because composing and editing on the computer are much easier than hand-written assignments.
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2.3 Personalised Coaching

It has been indicated that IL competencies cannot be sufficiently learnt and applied when imparted through a 'one-shot' session, be it in the form of lecture-tutorial, workshops or hands-on sessions (Mokhtar et al. 2007b). The competencies need to be entrenched through close coaching and mediated learning so that students are able to identify their learning gaps, rectify them and improve their learning under the close supervision and guidance of an expert. Mokhtar et al (2007b) found that close coaching or mediated learning makes a difference to how students performed in their IL test as well as in developing their group projects. Hence, the role of a coach or mediator – one who is able to lead students by asking the right questions for them to reflect on their learning, and who can then guide the learning process – makes a lot of difference. As Feuerstein (1980) explained, in close coaching or mediated learning, students learn through the intercession of a mediator whose main role is to help them interact more fruitfully with the learning factor, and interpret or even modify their responses in order to increase their understanding. As such, in this case, students were able to entrench the IL competencies that they learnt from the IL training sessions, and were better able to apply these competencies in their work or assignments, through the questions posed by the mediator or coach. This approach can be easily seen in college and university students' academic work where information literate faculties make an effort to personally impart IL competencies in students during project work or thesis consultation. However, this approach has not been reflected in any published literature on IL education in Malaysian secondary schools.

3. Discussion and Conclusion

Whatever approach is adopted for the development of IL in secondary school students, it is likely that a radical shift in teaching is necessary to place the enquiry and student information needs at the centre of the teaching focus. This requires an interpretation of IL which encompasses the knowledge and cognitive processes as well as the practical skills which are required. Equally important is a fundamental shift in classroom practice for many teachers and teacher librarians. Curriculum practices involving active, collaborative, resource-based learning are often pointed to as the ideal approach for teaching IL, and IL education can be fortified with personalized coaching. While effective information use underpins enquiry learning, problem based-learning, action learning and various other student-centred modes, Bruce (2002) opined that an effective IL education requires explicit attention to information processes, as well as the careful crafting of real world information practices, and meaningful reflection, into the curricula. The teacher librarians in Malaysia can make a difference in the learning process, but how an individual teacher librarian chooses to do so is a major challenge as there has been no empirical study conducted locally to prove that a particular teaching approach provides benefits in terms of inculcating IL in secondary school students. Numerous authors have mentioned the need for a teacher to use the inquiry model if the information and research process is to be successful. The reality is that there are a wide variety of teaching styles being used and the inquiry method is not currently the most popular model. Teachers and teacher librarians need to be realistic about their intervention strategies and should be able to work within a wide range of teaching and learning styles to achieve their goals in implementing IL and enhancing learning through technology, because real world information practices are at present centred around the digital information environment. As technology continues to come into classrooms and connections to the Internet are established, the pressure of making teachers and teacher librarians responsible for IL education continues.

To date, Malaysia has not made great strides in creating an ILSC and teaching students or teachers to handle the new collections of information currently available to most students. The way teachers design or encourage investigations, student expectations and the process by which students are performing investigations are a long way from what the literature is envisioning should happen. Major manuals of good practices and sound strategies are appearing in the literature and various IL tools are helping teacher librarians translate the theory into practice. The question is whether practice can be affected fast enough to produce the desired impact and to carve out an essential role for the teacher librarian in a school, and creating an ILSC in the long run. Teacher librarians have a role to play in developing an information literate school by providing resources not only for the students but also professional resources and support for teachers. They are in the unique position in coordinating information literacy activities across the curriculum, not only those taking place in the library but ensuring consolidation is maintained in the classroom. However, just as teachers need additional understanding and training in information literacy if they are going to be in a position to support information literacy in their students, teacher librarians need to understand the extent of information-related activity going on in the classroom, and the constraints under which teachers work (Williams & Wavell 2006b). Most importantly they need to consider information literacy frameworks and models in a learning rather than library context.

To conclude, as of now these are the two implications for Malaysian teacher librarians trying to create an ILSC:

1. Do something, such as work with the school management team and curriculum heads to ensure resource-based learning is a major focus and is included in the school's curriculum plan, rather than wait for the crafting of the perfect information literacy instruction.
2. Take a leadership role in planning a whole school approach to IL instruction through direct teaching, resource based learning and personalized coaching of information literacy skills for students as well as for other teachers.

References

AASL (American Association of School Librarians). 2000. *Information literacy: A position paper on information problem solving*. Chicago: American Library Association [Online]. Available at: http://www.ala.org/aasl/positions/ps_infolit.html [Accessed: 30 November 2008].

Abd Rahim Abd Rashid. 2000. *Model dan pendekatan pengajaran sejarah KBSM*. Kuala Lumpur: DBP.

Abdullah, A. 2007. *Eliciting users needs and architecting a collaborative digital library using Zachman Approach*. PhD Thesis. University of Malaya.

Abdullah, A. et al. 2006. Supporting information literacy practices in digital information environment: an approach using a collaborative digital library for school projects. *Proceedings of the International Conference on Information Literacy*, Kuala Lumpur, Malaysia, 14-15 June 2006.

ACRL (Association of College & Research Libraries). 2000. *Information literacy competency standards for higher education* [Online]. Available at: <http://www.ala.org/ala/mgrps/divs/acrl/standards/informationliteracycompetency.cfm> [Accessed: 30 November 2008].

Barron, B. J. S. 1998. Doing with understanding: lessons from research on problem- and project-based learning. *The Journal of The Learning Sciences*, 7(3-4), pp. 271-311.

The Big 6. 2006. *Information skills for students achievement* [Online]. Available at: <http://www.big6.com> [Accessed: 30 November 2008].

Blumenfeld, C. et al. 1991. Motivating project-based learning: sustaining the doing, supporting the learning. *Educational Psychologist*, 26(3-4), pp. 369-398.

Bruce, C. 2002. *Information literacy as a catalyst for educational change: A background paper*, July 2002, White Paper prepared for UNESCO, the U.S. National Commission on Libraries and Information Science, and the National Forum on Information Literacy, for use at the Information Literacy Meeting of Experts, Prague, The Czech Republic.

Chan, F.M. 2002. Developing information literacy in the Malaysian smart schools: resource-based learning as a tool to prepare today's students for tomorrow's society. In: Singh, D. et al. eds. *School libraries for a knowledge society*. Proceedings of the 31st Annual Conference of the International Association of School Librarianship and the Sixth International Forum on Research in School Librarianship. Petaling Jaya, Kuala Lumpur, Malaysia, (4-9 August, 2002). Seattle, WA: IASL, pp. 203-215.

Coley, R. J. et al. 1996. *Computers and classrooms: The status of technology in U.S. schools* (Policy information report). Princeton, NJ: Educational Testing Service.

Eisenberg, M. 2001. *A Big 6 skills overview*. New York: Big6 Associates [Online]. Available at: <http://www.big6.com/category/overview-of-big6-skills> [Accessed: 30 November 2008].

Eisenberg, M and Berkovitz, R. 1990. *Information problem-solving: The big six skills approach to library and information skills instruction*. Norwood, NJ: Ablex

Elmborg, J.K. 2003. Information literacy writing across the curriculum: sharing the vision. *Reference Services Review*, 31(1), pp. 68-80.

Feuerstein, R. 1980. *Instrumental enrichment: an intervention program for cognitive modifiability*. Baltimore, MD: University Park Press.

Gersh, S. 2000. Using the Internet to improve information literacy: A new role for the library media specialist. In: Howe, E. ed. *Information literacy: key to the future*. Papers presented at the 29th Annual Conference of the International Association of School Librarianship in Malmo, Sweden (6-10 August 2000). Seattle, WA: IASL, pp. 5-32.

Grant, M.M. 2002. Getting a grip on project-based learning: theory, cases and recommendations. *Meridian: A Middle School Computer Technologies Journal* [Online] 5(1) Winter 2002. Available at: <http://www.ncsu.edu/meridian/win2002/514> [Accessed: 30 November 2008].

Harley, B. 2001. Freshmen, information literacy, critical thinking and values. *Reference Services Review*, 29(4), pp. 301-305.

Henri, J. 2000. The information literate school community and the role of the principal. Paper presented at C2000 WASLA Conference. Perth, Australia (3 June 2000)

<http://jil.lboro.ac.uk/ojs/index.php/JIL/article/view/RA-V2-I2-2008-3>

Henri, J. et al. 2002. Sculpting an information literate school community: looking for touchstones. In: Singh, D. et al. eds. *School libraries for a knowledge society*. Proceedings of the 31st Annual Conference of the International Association of School Librarianship and the Sixth International Forum on Research in School Librarianship. Petaling Jaya, Kuala Lumpur, Malaysia, (4-9 August, 2002). Seattle, WA: IASL, pp. 121-139.

Humes, B. 1999. Understanding information literacy. Washington, DC: National Institute on Postsecondary Education, Libraries, and Lifelong Learning [Online]. Available at: <http://www.ed.gov/pubs/UnderLit> [Accessed: 30 November 2008].

Kasowitz-Scheer, A.. and Pasqualoni, M. 2002. Information literacy instruction in higher education: trends and issues. *ERIC Digest*. Syracuse, NY: ERIC Clearinghouse on Information and Technology. ED 465375.

Kuhlthau, C. 1993. Seeking meaning: a process approach to library and information services. Norwood, NJ: Ablex.

Malaysia, Ministry of Education, 2006. *Penilaian Menengah Rendah 2006: Buku panduan melaksana dan menilai Kerja Kursus Sejarah*. Kuala Lumpur: Lembaga Peperiksaan.

Means, B. and Olson, K. 1997. *Technology and education reform* (ORAD 96-1330). Washington, DC: U.S. Government Printing Office

McKenzie, J. 1998. The information literate school community. *From Now On. The Educational Technology Journal* [Online] 8(1) September. Available at: <http://fno.org/sept98/infolit.html> [Accessed: 30 November 2008].

Mokhtar, et al. 2007a. From dependence to independence: personalised coaching as a tool to entrench information literacy in students. Paper presented at the 36th Annual Conference of the International Association of School Librarianship, IASL 2007. Taipei, Taiwan, July 16-20, 2007.

Mokhtar, I.A. et al. 2007b. Guide me, show me: personalised coaching as a means of entrenching information literacy competencies in students. *Library and Information Science Research Electronic Journal (LIBRES)* [Online] 17(2) Available at: <http://libres.curtin.edu.au/libres17n2/index.htm> [Accessed: 30 November 2008].

Plotnick, E. 1999. Information literacy. *ERIC Digest*. Syracuse, NY: ERIC Clearinghouse on Information & Technology. ED427777 [Online]. Available at: <http://www.ericdigests.org/1999-4/information.htm> [Accessed: 30 November 2008].

Razali, N. et al. 2006. Designing and developing information literacy module based on the Big 6 skills for resource teachers. *Proceedings of the International Conference on Information Literacy*, Kuala Lumpur, Malaysia (14-15 June 2006).

Roes, H. 2001. Digital libraries and education: trends and opportunities. *D-Lib Magazine* [Online] 7 (7/8) Available at: <http://www.dlib.org/dlib/july01/roes/07roes.html> [Accessed: 30 November 2008].

Ryser, G. R. et al. 1995. Effects of a computer-supported intentional learning environment (CSILE) on students' self-concept, self-regulatory behavior, and critical thinking ability. *Journal of Educational Computing Research*, 13(4), pp. 375-385.

Sidman-Taveau, R. & Milner-Bolotin, M. 2001. Constructivist inspiration: a project-based model for L2 learning in virtual worlds. *Texas Papers in Foreign Language* 6 (1). Austin, TX: University of Texas at Austin [Online]. Available at: <http://studentorgs.utexas.edu/flesa/tpfle/tpflefall2001.htm> [Accessed: 30 November 2008].

Stripling, B. K. 1995. Learning-centered libraries: implications from research. *School Library Media Quarterly*, 23(3) Spring, pp, 163-170.

Williams, D.A. and Wavell, C. 2006a. Teachers' conceptions of information literacy in relation to their classroom practice [Online]. Available at: www.rgu.ac.uk/abs/research/page.cfm?pge=13088 [Accessed: 30 November 2008].

Williams, D.A. and Wavell, C. 2006b. Untangling spaghetti? the complexity of developing information literacy in secondary school students [Online]. Available at: <http://www.rgu.ac.uk/abs/research/page.cfm?pge=37291> [Accessed: 30 November 2008].

APPENDIX A

The benchmarks used to determine how well a school is progressing towards an ILSC (Adapted from Henri et al. 2002)

THE SCHOOL

- The school has an information policy in place
- The school has adopted an information technology plan
- The school has a Homepage, and Intranet and Extranet.
- The school library has a Homepage and Intranet.
- The school has benchmarked information competencies that are expected of students at key points in their school career.
- A significant percentage of the school funds are budgeted for the provision of information services
- The school understands and defends the role of the teacher librarian, as articulated in policy documents
- The school requires that the teacher in charge of information services be a qualified teacher librarian
- The school supports the professional development of staff with respect to information literacy
- The school monitors the information work demands that are placed on students
- The school fosters knowledge management and expects the teacher librarians to provide timely information for corporate decision making, providing the resources to make this possible

THE STUDENTS

- Students build a portfolio of evidence of their level of information literacy
- Students are able to recognize that their teachers are learning as well as teaching.
- Students are encouraged to provide constructive feedback to teachers with respect to information-based learning tasks
- Students maintain logs or other records of their learning the successes and challenges and are involved in self-assessment

THE TEACHERS

- The teachers teach information skills across the curriculum and in context
- When assessing students, the teachers are interested in drafts and other working documents as they are in the final piece of work
- Teachers encourage student collaboration in many aspects of their learning – with teacher librarians, class teachers, special teachers and other students.
- Teachers talk, dream, plan and teach as a team rather than as a group of individuals.