An Assessment and Potential Developments of Singapore Schools Media Resource Libraries

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INTRODUCTION

The Media Resource Library – The MRL should be the centre of the school’s learning and teaching activities, especially the promotion of interest in reading among school pupils and inculcating in them independent learning skills. Care and thought need to be given to the organisation and development of the MRL and its services.

_Singapore Schools Principal’s Handbook_

The MRL in schools is envisaged to play a very important and central role in support of education in the information age. It is a vital instrument of the education process in both aspects of teaching and learning. The MRL is the central depository of tangible information resources that are supplemented with offline and online digital resources that can be made available through network connectivity to other parts of the school, or even to homes of students and teachers.

This document traces the major milestones of events and activities that have impinged and impacted the schools’ MRLs to its present form today, and reviews the current status of MRLs. Challenges and opportunities for these MRLs in the advent of the information-age schools are identified and discussed. Specifically, it addresses the staffing and training aspects that are deemed necessary to implement and sustain a successful MRL. The findings and recommendations are based upon the research and proven successful MRLs examples of US information age schools.

The Master of Science in Information Studies programme (MSc (Info Studies)) in the Nanyang Technological University, that has recently introduced a full-time mode of study in July 2000, has a special track designed specifically for the training and education of teachers to fulfill their duties and roles as MRL appointment holders and stakeholders in schools is presented. Various modes in which the MSc (Info Studies) programme can be undertaken and completed and the roles in which the Ministry of Education can play to support this aspect of training are proposed and outlined.

This document therefore serves as an agenda for deliberation with the main aim to propose the systematic training and education of teachers to equip them with specialised information skills and knowledge in the foreseeable future. This in turn, will transform and leapfrog Singapore schools to reach the frontier of information-age schools in this region, and to fulfill the government’s vision of “Thinking Schools, Learning Nation”.

1
SUMMARY OF MAJOR MRL-RELATED EVENTS AND INITIATIVES


The Plan aims to transform Singapore into an intelligent island where the use of information
technology is pervasive in every aspect of society, including schools around the country. A
National Information Infrastructure (NII) based on fibre-optic and wireless technology form the
backbone for the provision of vast reservoirs of electronic stored information and services to all
homes, offices and ministries. When fully implemented in 15 years, it will interconnect
computers in virtually every home, office, school and factory so that the computer will evolve
into an information appliance, combining the functions of the telephone, computer, TV and
more. It will provide a wide range of communication means and access to services. (National

1994  Library 2000

In line with the vision of the IT2000, Library 2000 is aimed at the transformation of library
services throughout the country with its mission to expand the learning capacity of the nation.
It articulates the need for the creation of networked borderless libraries to provide more
convenient and easy access to information resources. The plan contains a specific aspect of
school libraries whose focus is to achieve the government's vision of a well-informed and
cultured society by promoting literacy, reading habits and information skills among students.
Inculcating information skills in schools is seen as part of the strategic thrusts to develop
Singapore into a learning nation. Fostering intellectual curiosity, critical enquiry, critical
thinking and the capacity for self-directed learning are key aims of the educational programme
(Library 2000 Review Committee, 1994).

One of three enablers to realise a successful Library 2000 initiative, namely the human resource
enabler, stresses the importance of human resource as a key foundation of a library as it is the
people who can and will drive its growth. The new breed of librarians in the future are expected
to handle more sophisticated tasks of information retrieval, analysis and dissemination, and to
act as mediators between users and the array of technologies available to access information in
digital form. To this end, it proposes a number of specific recommendations for School
Libraries in that it should:

- Be managed by full-time professional teacher-librarians who have dual qualifications in
teaching in librarianship. Such professionals could more effectively teach students the
lifelong skills of independent learning;
- Recruit full-time technicians to support these professionals;
- Form a network of borderless school MRLs.

As an incidental note, the Master of Science in Information Studies programme at Nanyang
Technological University, and the Technician Diploma in Library and Information Science at
Temasek Polytechnic are direct consequences of the Library 2000 initiative to train these two
groups of information professionals and information para-paraprofessionals to function in a
wide range of information intensive industries, including schools MRLs.
1996 Singapore ONE – (One Network For Everyone)

In order to provide network support for the level of services envisaged in the IT2000 Plan, Singapore ONE aims to equip homes, businesses and schools in Singapore with a broadband infrastructure of high capacity networks that possess high-speed and high-capacity capabilities. Through this, it becomes possible to support high-speed interactive, multimedia applications and services across the network, not only for advanced users, but for everyone and everywhere on the island. (Singapore ONE, 1998).

With this availability of this high-speed and broadband network, information surfing, retrieval, and learning are expected to become stimulating and entertaining adventure. It is viewed as a key enabler to transform traditional libraries into digital libraries in which users will be able to enjoy a new level of content-rich, interactive multimedia services, and three-dimensional media rich graphics.

1996 PRIME – Programme for Rebuilding and IMproving Existing schools
1997 Master Plan for Information Technology in Education

In 1996, a strategic plan PRIME, was passed to remodel existing schools to meet the needs of the information and knowledge age. In tandem, the more specific 1997 Master Plan for IT in Education was put into action. Among its objectives, the master plan aims to use IT to encourage students to engage more actively in independent learning and to measure their abilities in applying information, thinking and communicating. The foremost area of upgrade was in IT, focusing on expanding and upgrading the MRL in each school. In this instance, MRLs are designed to have 80-90 square meters for an instructional area within the facility, and they have computer workstation islands including from 3-5 computers for student access and use.

The master plan acts as a blueprint for the use of IT in schools and provides every student access to an IT-enriched school environment. In this respect, schools were divided into different phases as a means to implement the plan that stretches over a 5 year period till 2002 (Ministry of Education, 1997a). Phase I schools were refurbished using an institutional model while Phase II schools MRLs are expected to more user friendly as a result of using interior decorators for the design of the MRLs. Additionally, the amount of space allocated to MRLs in schools is increased substantially in contrast to 1974 figures. This comparison is shown in Table 1.
Table 1. Space and Standards Comparison of MRLs in 1974 and 1998

<table>
<thead>
<tr>
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<th>Secondary Schools</th>
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<tr>
<td>Additional computer laboratories</td>
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<tr>
<td>New IT resource rooms</td>
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<tr>
<td>Larger MRL space</td>
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</table>

The implementation of the 5-year plan has the following milestones:

**1997**
22 (Phase 1) Demonstration schools to integrate IT into curriculum

**1998**
About 90 (Phase 2) schools to come on-stream

**1999**
About 250 (Phase 3) schools to come on-stream

**2000**
Core training for teachers in every school will be completed

**2002**
2:1 pupil-computer ratio in schools with 30% IT-based curriculum time

It is also within this IT master plan that to have a network system within each school and to link all schools through the Wide Area Network and Singapore ONE.

**1997 Guidelines on Development of Information Literacy**

In complementing the 1997 Master Plan for IT in Education, the Curriculum Planning and Development Division of the Ministry of Education prepared a set of guidelines for the development of information literacy (IL) among students in schools (Ministry of Education, 1997b). These are meant to support an education that encourages creativity, independent learning, and student responsibility for learning, as well as to promote the creation of widely-read individuals. Among others, the guidelines encompass the design of an IL programme that spells out the learners’ outcomes and proposes a IL curriculum that focuses on inculcating the right skills and attitudes of school students. The MRL is also viewed as an important resource and activity centre to facilitate such IL training in schools.

**1998 MERLIN (Ministry of Education Integrated Library Network System)**

Pre-1998, MRLs had automated library systems to assist in MRL operations and management, albeit non-coordinated or non-compatible in many cases. A decision was subsequently decided to develop an integrated library network system for use by all schools in Singapore, MERLIN.
CARL System from the US was contracted to design and develop MERLIN. Both the National Library Board and Ministry of Education selected CARL in order to ensure that the software used in the public and school libraries in Singapore will be compatible. CARL had an impressive track record and experience in developing a range of library-related software. Their public services software is designed to provide the customer with a powerful search engine suitable for the first time novice and for the expert researcher, as well as an interface for multi-lingual OPAC access.

Once the system was selected, each school’s electronic records were to be populated into the system. Even though most of the schools’ records had been computer generated for years, many were MARC-incompatible so that it was very difficult to reconcile the existing records with an international standard necessary for sharing information in a digital age. Nonetheless, once these issues are resolved, this integrated library system is expected to serve Singapore well for the future. The first phase of the implementation of MERLIN includes the OPAC, circulation, and inventory components of the system. Additionally, the KID’s Catalog is also one of the components to be implemented. This contains functionality to support type search, exploring different subject areas (that are customized to include local, state, national and “hot topics”), FindIt to help children find information on their topic, best stories, and events of the MRLs.

In other related MRL developments, four schools in Singapore have been part of a pilot project using self check-out machines. Students, teachers and parents can check-out their own resources without any manual intervention.

CURRENT STATUS OF SCHOOLS MRLS

As of September 2000, the Singapore public school statistics indicate there is a total of 201 primary schools with 300,153 students, 163 secondary schools with 173,007 students, 15 junior colleges, and 2 centralised institutes.

The vast majority of these schools are public schools, but there are also many independent schools – religious – association, ethnic groups, clan schools, and so on. The size of most primary schools range from 800-1200 students and secondary schools range from 1,200 to 2,600 students.

In the current staffing model of most of the schools, the Library Coordinator (LC) or sometimes a Subject Head/Library (SH/Library) manages the various aspects and running of the MRLs, whilst assisted by a committee of between one to 10 Teacher Librarians (TL). The LC is supervised by a Head of Department/Instructional Technology cum MRL (HOD/IT cum MRL). This model is not practiced across all schools in Singapore since there are many other factors that can affect staffing of the MRLs. These include the School principals’ organisation of the various departments, mission of the MRL’s, the type of schools, and the staff strength in the schools.
Almost all teachers who hold these appointments in relation the school MRL are not trained professionally in the Library and Information Science discipline, contrary to what has been proposed in the Library 2000 initiative.

**CHALLENGES OF MRLS FOR THE FUTURE**

In his keynote address at the Library@School conference in 1999 and a subsequent related paper in the *Singapore Journal of Library & Information Management* (Foo, 1999a & 199b), Professor Schubert Foo observed that “there is a clear move towards a combination of examination and extra-curricular excellence, information technology know-how and computer (information) literacy skills” in Singapore schools. The government of Singapore is making a concerted effort to change the way education is delivered. There is an emphasis on the use of the new technology in learning and retraining the teachers to teach using these new technologies and new instructional methods which engage the learner.

In this respect, six challenges and opportunities for the MRL in meeting the needs of schools in the new millennium are identified. These include:

- planning for the MRL to support the education’s new focus;
- assessing and deriving an organizational structure for the MRL to ensure it meets current and future demands;
- developing the human resource training package and programme for the MRL staff;
- developing and managing the MRL collection of materials and services;
- identifying ways to make the MRL the hub of educational and learning activities; and
- incorporating an MRL component in the school’s ranking system.”

In the past four years, the Media Resource Libraries (MRL) of Singapore have been enlarged and modernized physically. It is appropriate and timely to proceed, keeping in view these challenges, towards developing and implementing policies for properly staffing these modern facilities and to support the MRLs many roles in education in these information-age schools.

**NANYANG TECHNOLOGICAL UNIVERSITY’S DEVELOPMENTS AND PROPOSAL**

The Master of Science in Information Studies as started in Nayang Technological University in 1993 to train information professionals as outlined in the Library 2000 initiative. Over the years, the programme has been revised, strengthened and expanded to cater for the education of information professionals from a wide range of students from all types of industries. The programme has undergone three curriculum revisions with the most significant in 2000, when it introduced a full-time Masters programme and, at the same time among others, offered a special track designed for school teachers.

The new programme aims to harvest a new breed of highly demanded multidisciplinary information professionals with the skills to develop and deliver value-added information and products and services in the new digital economy. It complements the existing part-time programme and day-release programme for National Library Board staff, offering a new
curriculum with two main areas of concentration – in Information Management and Systems, and Library and Information Science. A new specialisation in School Libraries and Media Resources has been specially designed to provide professional training for Heads of Divisions, Library Coordinators, Audio Visual Specialists and Teacher Librarians of the Media Resource Libraries in Schools.

A number of teachers of Singapore schools have graduated from the programme. At present, a number of teachers are enrolled in the part-time and full-time Masters programme. The programme consists of coursework plus dissertation. The courses are conducted through lectures, tutorials and laboratory sessions through a two-semester year, July-October and January-April. For the part-time programme, classes are held two or three evenings a week from 6.30 to 9.45 p.m. The coursework can normally be completed within 2 semesters (twelve months) if the programme is taken full-time, and four semesters (twenty-four months) if taken part-time. Full-time students basically double up on the number of subjects taken per semester. Students are also required to undertake a Project in any of the disciplines of the information studies field. They are also encouraged to work on a Project that is related to their chosen area of specialisation.

Teachers in the part-time programme generally make arrangements with their respective schools and have the support of their principals. Teachers in the full-time programme usually takes a period of no-pay leave of absence to attend the programme.

In order to recognise the relevance of the programme in meeting the needs of the Education Service, one important development that can take place is the inclusion of this programme in the list of postgraduate courses for the “Reimbursement of Course Fees” scheme. This scheme, that applies from 1 January 1999 will subsidise 50% or a maximum $3000 for each course completed successfully. At present, the list consists of postgraduate courses include MA (English), MEd, PGD in Chinese, Malay, English, History, Geography and Literature. Other means to facilitate the training of MRL staff such as in the present mode of granting no-pay leave can be continued to allow teachers attend the full-time programme.

Another more ideal alternative is the have a sponsored MOE programme for schools teachers so that they can join in the full-time programme and obtain the training in the shortest possible time frame of one year. Nominated teachers from different cluster schools throughout the island can be identified and enrolled in the programme. This not only ensures that the participants gain a formal Masters degree in Information Studies, but more importantly, is that they are competently trained and educated to manage and deliver the future services of MRLs for a sustained period of time upon graduation and to support the changing education focus on independent project work.

In this respect, the Division of Information Studies has signalled its interest and co-operation to collaborate with the Ministry of Education closely to explore various means and ways to add flexibility to the programme. A number of initiatives were outlined by the Division in an invited meeting with the Superintendents of the Singapore cluster schools on 16 March 2001. These included:

(1) A study mission to MRL of US schools for Superintendents. This is an awareness and fact finding mission to assess the need for properly developed MRLs and their impact on outcomes
of education. It allows participants to orientate, observe and learn best practices. The mission can be arranged on an-going basis and extended to Principals, Vice Principals, HODs and other stakeholders over time.

(2) Exploring the option of sponsoring teachers or to make special arrangements for teachers to attend the MSc(IS) programme either though the existing 1 year full-time or 2 year part-time programme, or a specially tailored 1 or 2-year day-release programme similar to that offered to the National Library Board for training of its professional staff. In this tailored mode, teachers are expected to be able to study and still provide a limited teaching service to schools. For example, arranging for day-release classes, weekend classes or more intensive “school-holiday” classes may be possibilities that can be feasibly explored to facilitate the completion of the programme.

When such collaboration becomes possible, the Division has the intention to refine its current School Libraries specialisation to make it even more relevant to the needs of Singapore schools through the introduction of new electives. The Division teaching staff in this specialisation is also expected to an advisory role and help the teacher-students to develop their individual schools’ MRL as part of their coursework and assignments. This is expected to give rise to new or improved functional MRLs units in the form of its physical development, and in the provision of products, services and programmes. The end result of this effort is a showcase group of MRLs with each new intake of teacher-students, that will be incrementally incremented to include most (or all) of Singapore schools’ MRLs. The Division also intends to develop a comprehensive Web-based portal to support MRL related activities. This will be built up over the conduct of the course modules, and maintained up-to-date by new batches of teacher-student intakes. It is expected that all Singapore School Library Media Specialists, regardless if they are enrolled in the programme, shall be invited and given access to this portal.

PROPOSED AGENDA

A proposed agenda is set out in this section for consideration by the relevant education authorities, including School Principals who have autonomy over the development of the MRLs in their schools. These proposals are based on the background and rationale contained in this document, and supported by a number of “proven success models” and “best practices” adopted by overseas US schools such as those in Colorado, Alaska and Pennsylvania. Appendix 1 details these studies that assesses the impact of the MRL on academic achievements. Appendix 2 examines the formation and role of the “knowledge navigation team” (i.e. the MRL team) that are responsible for the operation and management of the MRL as the Knowledge Centre of schools. It also provides a specification for the various members of the MRL team in their respective areas of work. Appendix 3 provides further information on the Knowledge Centre concept.

The agenda for action is outlined:

1. **Explore the adoption of the Library 2000 recommendations for School Libraries** that prescribes that the MRLs should be managed by full-time professional teacher-librarians who have dual qualifications in teaching and librarianship. These professionals could more effectively teach pupils the lifelong skills of independent learning. Recruit appropriately
trained full-time technicians (i.e. para-professionals) to support these professionals. At present, the local training of information professionals and para-professionals are provided by Nanyang Technological University and Temasek Polytechnic respectively.

2. **Assess immediately the current staffing model** and bring it up to the norm across all School Libraries. Develop and implement, policies and procedures for a new staffing model for all MRLs. Essential elements of these policies and procedures can include consideration of the following:

- Identify the most creative teacher/administrator/librarian/IT teacher or equivalent in each school;
- Sponsor them to attend the MSc (Info Studies) degree on a full-time, part-time or tailored-course with a specialization in School Libraries and Media Resources;
- Employ these graduates in a new position of Knowledge Navigator, salaried at the vice-principal level, to coordinate these Knowledge Centres.

3. **Assess the current facilities and resources of MRLs, and make the move towards World Minimums** as soon as possible. Resources should continue to be funded as appropriate for the new vision. In terms of access to resources, insure that individual students have access to resources on a regular basis, individually, rather than in groups.

**CONCLUSION**

Much has taken place over the last ten years in the transformation of Singapore into the digital and knowledge-based economy, including the transformation of Singapore Schools into networked high-technology schools with MRLs that provide full access to the Internet and other online information resources to facilitate the provision of electronic information for student learning and discovery. The MRL is an essential central unit of the school, forming the nerve centre of learning, especially with the current emphasis on project-oriented work and infusion of critical-thinking in education.

Adopting “best practices” and emulating “success models” of overseas schools is an important step to further improve the quality of services and resources of the MRLs. To this end, this document has examined the status of Singapore schools and incorporated a number of related publications in the Appendices to make known the developments that are practiced by these overseas MRLs who brace the knowledge centre concept to lead world class learners into the 21st century. An agenda is proposed for deliberation in order to eliminate the gaps that are apparent in Singapore MRLs in contrast to our overseas counterparts. These include the adoption of the extensive work done by the Library 2000 Committee that prescribes staffing of
MRLs with full-time professional teacher-librarians to act as important catalysts for learning in schools, carry out an appraisal of the staffing-model to engender the systematic training of these teacher-librarians, and ensuring that the facilities, resources, services are compatible with world minimum norms of the information-age schools.

REFERENCES


Appendix 1

Library media impact studies is an important and ongoing research activity to assess the impact of the schools’ media resource libraries, the library media programmes, and the role of the school librarians on student achievements. So far, all the research, reported statistics and evidences clearly demonstrates one thing. All these components are essential and present in successful schools. Success in these areas directly lead to higher student achievements, in higher tests and examination scores regardless of the school’s teacher-pupil ratio, and other forms of achievement.

This Appendix selectively lists four publications from the large volume of literature on this area to demonstrate the correlation between these components and successful schools:

3. Christine Hamilton-Pennell, Keith Curry Lance, Marcia J. Rodney, and Eugene Hainer (2000). Dick and Jane Go to the Head Of the Class. (What do students need in order to succeed? The latest research insists they need strong library media programs). School Library Journal Online (SLJ Online), April 1, Available online at: http://www.slj.com/articles/articles/20000401_7475.asp

Interested users are encouraged to access and read the attached links (wherever applicable) directly.
Appendix 2

Program Management, Activities and Services Policies

Media Resource Library as Knowledge Center

As you make major decisions, which ones are essential for a quality learning experience? Students and teachers must have access to quality information using the most efficient electronic means. To accomplish this takes a Knowledge Navigation Team of four highly skilled individuals serving from 500-800 students:

1. Library media specialist(s)
2. Technology specialist(s)
3. Media technology assistant(s)
4. Curriculum/Reading Specialist(s)

Such a proposal is backed up by the following studies and applications:

1. Significant and longitudinal studies concerning the impact of school library media centers on academic achievement. For instance, the American Association of School Librarians (AASL) advocated a set of “Resource Guides for School Library Media Program Development (http://www.ala.org/aasl/resources/). These comprehensive web-based guides comprise a working bibliography of resources gathered by AASL staff and members that includes books, journal articles, Web sites, and other media. Items are arranged alphabetically by frequently used topics in the professional literature

2. Practical application in Pasco County Schools (Florida). In 1988 they began providing a generous building level allocation for purchase of library media resources. Nineteen ninety-four (1994) was the beginning for a technology team in every school, which resulted in a 1998 document, Flexible Access: Organization Model for School Media Technology Programs to Support classroom Teaching and Learning; spearheaded by Johnnie Sprimont, Director of Instructional Media Technology and a team of nine (9) media/technology specialists from Pasco County, Florida. (This source is liberally used for documentation throughout this article with permission.)

3. Recent study and evaluation by Keith Curry Lance and Eugene Hainer from the Colorado Department of Education. Their research results for the states of Alaska, Colorado and Pennsylvania are summarized in Appendix 1.

Some of the activities that can be observed by visitors to a library media technology center, being performed by the media technology team include those of:

(a) Building and maintaining of quality school Web sites. For example, a site from an inner city elementary school in Jacksonville, Florida. (http://www.ccse.net/~clokwko/)
(b) Promoting reader’s awards activities. For example, Sunshine State Young Readers Award Program is a statewide reading motivation program for students in grades 3-8 administered by the Florida Department of Education and the Florida Association for Media in Education (http://www.firn.edu:80/doe/bin00015/ssyrap.htm)

(c) Organizing, promoting and delivering:

- Reading Association Incentives (http://www.reading.org/)
- National Children’s Book Week (http://www.cbcbooks.org/)
- Computer Week (http://www.FACEnet.org)
- Student Media Festival (http://www.firn.edu/fame/jharbin.htm)
- National Library Week (http://www.ala.org/pio/nlw/)
- Teleconferences
- Electronic Field Trips
- Technology Fairs
- Technology Parent Nights
- Internet WEB Related Units
- Seasonal Enrichment Activities

(d) Media, curriculum and/or technology specialist(s) planning with teachers/teams to deliver classroom curriculum activities originated by classroom teachers:

- Providing resources for themes and units
- Providing teacher and student training as needed

(e) Teachers and specialist(s) working together in the media center or classroom with students

(f) Specialist(s) and/or media technology assistant working with individuals and/or small groups of students for:

- Student production/presentations
- Storytelling
- Reference skills
- Video taping
- Multimedia productions
- Hypermedia production
- Internet searches
- Web page design and development
- Newscasts, etc.

(g) Individual student visits for independent use of literature and information resources
The Modern World Class School

Mission

The mission of the knowledge center program is to actively support the teaching and learning process. Classroom instruction and student needs are the driving force behind an effective program.

The learning process within a school is dependent upon the collaborative efforts of all those responsible for student learning – teachers, specialists and administration. When the knowledge navigation specialists assume leadership roles in the school-wide curriculum planning process. The result is a more integrated use of media resources and technology. Knowledge navigation specialists plan with teachers to develop, implement and evaluate resource-based thematic units using the media center and its resources as an extension of the classroom. Students learn to find, access, evaluate, use, and share literature and information in many forms, acquiring lifelong learning skills.

Flexible Access provides the organizational framework for students and teachers to explore and use a variety of learning resources at point of need. It allows for simultaneous use of the knowledge center by individuals, small groups and classes. At any given time, there may be individual students using the media center independently, small groups working on research, production, internet projects, selecting books for personal reading; and teachers and specialists working together with classes on theme-related learning activities.

It also allows specialists the physical freedom to provide resources and expertise at the time and place of need. Some resources and support may be better provided in the classroom or other areas depending on the instructional activity. The flexible access program maximizes the use of resources and facilitates unrestricted opportunities for specialists to best support the school district’s philosophy of instruction.

As school knowledge programs continue to evolve, it is paramount that specialists’ professional development plans reflect ongoing training and consultation necessary to update their organizational and instructional practices to fit their changing roles. As specialists grow professionally, their greater expertise increases their value as a resource to teachers and students in the teaching/learning process.
The Knowledge Navigation Team

The Knowledge Navigation Team is composed of the media specialist(s), technology specialist(s), media technology assistant(s) and in some cases, the reading specialist. A strong team is a necessary component of the effective knowledge center program. The success of the program depends on the strength of each team member and their ability to work together to achieve common goals.

Communication between team members is critical. The following suggestions facilitate communication between team members:

- Schedule a planning time for the team to meet weekly.
- Develop annual program goals and objectives, including budget, together.
- Arrange for informal times together talking about “business.”
- Arrange for common lunch times whenever possible.
- Listen to your partners.
- Locate offices near or adjacent to one another.
- Share your work schedule and whereabouts with one another. A large calendar or weekly agenda can help with this task.
- Share professional and personal goals.
- Recognize and reward one another’s contributions and efforts.
- Trust your partners.
- Be flexible.
- Present a “common front” to the faculty.
- Keep in mind that the team goal takes precedence over individual goals.
- Recruit the reading specialist, thus creating a key “Curriculum Support Team.”

Be involved in the selection process for new staff. It is important to select people who support a team approach. Keep in mind that ongoing training can increase skills, and expertise, but people’s skills are not easy to change.
Knowledge Center Program Policy Implementation

Staffing

All individual school buildings with an enrollment of more than 250 students require two (2) professionals supported by one (1) full-time equivalent support staff. The professionals need to be highly respected teachers first, with a master’s degree, specializing in library media. The staff should be a team. One of the professionals will normally coordinate the traditional aspects of the program and the other will coordinate the technical aspects.

The principal is responsible for recognizing that these two professional positions are the key for a successful school, just as the stability of a quality principal is a key component.

Planning

Planning is an essential for success! Important issues for planning include the provision of the following:

1. Develop a 5-10 year long range plan
2. Three years before a planned retirement or planned move, select outstanding teachers to earn their certification as library media specialists
3. Encourage many quality teachers to specialize in library media, for their graduate program, because more teachers will need this type of preparation to remain quality teachers. The courses as they are currently organized will enhance any teacher’s instructional expertise:

   a. Children’s Information Sources
   b. Young Adult Information Sources
   c. Information sources and Services
d. Network Information Production and Management  
  e. Multi-Media Production  
  f. Instructional Role of the Information Specialist  
  g. School Library Media Management

4. Support the professional staff with at least one (1) full-time equivalent support staff. Usually one (1) clerk and a shared technician, based on the quantity and quality of the computer network

Examples Of Staffing Patterns

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<td>3 2 0</td>
</tr>
<tr>
<td>2000 +</td>
<td>4 3 2</td>
<td>4 2 1</td>
<td>3 2 0</td>
</tr>
</tbody>
</table>

Equipment

<table>
<thead>
<tr>
<th># Students</th>
<th>High Technology</th>
<th>Some Technology</th>
<th>No Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comp. in Center</td>
<td>Comp. in Lab</td>
<td>Comp. In School</td>
</tr>
<tr>
<td></td>
<td>Comp. in Center</td>
<td>Comp. in Lab</td>
<td>Comp. In School</td>
</tr>
<tr>
<td></td>
<td>Comp. in Center</td>
<td>Comp. in Lab</td>
<td>Comp. In School</td>
</tr>
<tr>
<td>100 - 249</td>
<td>15 15 45</td>
<td>10 10 30</td>
<td>0 0 0</td>
</tr>
<tr>
<td>250 - 799</td>
<td>30 40 110</td>
<td>15 30 85</td>
<td>0 0 0</td>
</tr>
<tr>
<td>800 - 1199</td>
<td>40 60 150</td>
<td>20 40 100</td>
<td>0 0 0</td>
</tr>
<tr>
<td>1200 - 1999</td>
<td>60 80 210</td>
<td>30 50 120</td>
<td>0 0 0</td>
</tr>
<tr>
<td>2000 +</td>
<td>80 120 290</td>
<td>45 75 180</td>
<td>0 0 0</td>
</tr>
</tbody>
</table>
# Essential Tasks For Knowledge/Information Programs in High Tech Schools

<table>
<thead>
<tr>
<th>Professionals/Specialists</th>
<th>Technical Staff</th>
<th>Clerical Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Organize facility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Arrange furniture and shelves for effective use</td>
<td><strong>1. Develop and maintain network (LAN and WAN) in consultation with professional(s)/specialist(s)</strong></td>
<td><strong>1. Assist professional/specialist in facility organization</strong></td>
</tr>
<tr>
<td>B. Establish display areas, located to attract users</td>
<td>A. Need to be prepared to efficiently operate existing networking system</td>
<td>A. Arrange resources on shelves and in cabinets</td>
</tr>
<tr>
<td>C. Locate circulation area conveniently for staff and users</td>
<td>B. Regularly maintain equipment</td>
<td>B. Supervise display changes</td>
</tr>
<tr>
<td>D. Locate multi-media computers, research computers, word processing computers and printers</td>
<td>C. Promptly repair broken computers on the network</td>
<td>C. Supervise checkout desk</td>
</tr>
<tr>
<td>E. Provide well equipped and organized TV and editing areas</td>
<td><strong>2. Develop Program</strong></td>
<td></td>
</tr>
<tr>
<td>F. Establish and organize a work room (technical services)</td>
<td>A. Analyze community and test score results</td>
<td></td>
</tr>
<tr>
<td>G. Plan and organize a professional collection.</td>
<td>B. Analyze job description and meet with supervisor, usually the principal</td>
<td></td>
</tr>
<tr>
<td><strong>2. Develop Program</strong></td>
<td><strong>2. Proficiency in operating systems and programs</strong></td>
<td></td>
</tr>
<tr>
<td>A. Analyze community and test score results</td>
<td>A. Operate checkout system in consultation with professional(s)/specialist(s)</td>
<td></td>
</tr>
<tr>
<td>B. Analyze job description and meet with supervisor, usually the principal</td>
<td>B. Reshelve items promptly</td>
<td></td>
</tr>
<tr>
<td>C. Develop and/or revise job descriptions</td>
<td><strong>2. Assist in program delivery</strong></td>
<td></td>
</tr>
<tr>
<td>D. Determine which staff members work together best</td>
<td>A. Operate checkout system in consultation with professional(s)/specialist(s)</td>
<td></td>
</tr>
<tr>
<td>E. Develop teams of staff members</td>
<td>B. Reshelve items promptly</td>
<td></td>
</tr>
<tr>
<td>F. Have regular meetings of the program advisory committee</td>
<td><strong>2. Assist in program delivery</strong></td>
<td></td>
</tr>
<tr>
<td>G. Participate in the school advisory committee</td>
<td>A. Operate checkout system in consultation with professional(s)/specialist(s)</td>
<td></td>
</tr>
<tr>
<td>H. Analyze program strengths and weaknesses</td>
<td>B. Reshelve items promptly</td>
<td></td>
</tr>
<tr>
<td>I. Ensure that quality program elements are continued</td>
<td><strong>2. Assist in program delivery</strong></td>
<td></td>
</tr>
<tr>
<td>J. Work with key teachers and administrators</td>
<td>A. Operate checkout system in consultation with professional(s)/specialist(s)</td>
<td></td>
</tr>
<tr>
<td>K. Analyze budget elements which affect program</td>
<td>B. Reshelve items promptly</td>
<td></td>
</tr>
</tbody>
</table>
### 3. Develop and organize resources

- A. Analyze orders in process
- B. Check to see if any items are in the “consideration file”
- C. Analyze the existing print collection
- D. Analyze the existing non-print collection
- E. Analyze the existing equipment and network
- F. Encourage input for new resources from students, faculty and parents

### 3. Maintain computers, minor repair and software loading.

### 4. Develop role in the school

- A. Analyze politics of the program staff
- B. Analyze politics of the administration
- C. Analyze politics of the faculty
- D. Analyze politics of parents/teachers organization
- E. Analyze politics of the school advisory council
- F. Analyze politics of program advisory council

### 5. Analyze and develop budget

- A. Examine existing budget and develop elements of next year’s budget
- B. Obtain help from the school district to develop authorized budget format
- C. Analyze and develop a three year short range budget plan
- D. Analyze and develop a 5 year long range plan

### 6. Professional development activities.

- A. Join appropriate professional societies
- B. Participate in local professional activities
- C. Develop a Web Bookmarks folder of sites which assist with professional development
- D. Plan and develop a professional resources area and Web Site
Appendix 3

Knowledge Center Concept: Leading World Class Learners into the 21st Century

The project was initiated by Dr. Tom Hart. The “White Paper” was prepared by the late Dr. Judy M. Pitts in cooperation with Dr. Tom Hart, Dr. Fran Kochan, Dr. Robert Lathrop, Dr. F. William Summers, Dr. Landra Rezabek, Ms. Constance Lane and Ms. Donna Shrum. Special acknowledgments go to Dr. Shirley Aaron for allowing use of her term “Knowledge Center” and to Dr. Dianne Oberg for her description of the "scripts" that guide role perceptions.

Introduction To The Project

Some might call the Knowledge Center a twenty-first-century library, but we prefer to think of it as an evolving, kaleidoscopic, nonstop learning event. Its program will lure youngsters with the joy of a story well told and engage their minds with the excitement of information. It will move them from depending on others to fill their information needs to functioning independently in a knowledge-rich world. Yet, it will also foster a vital interdependence as children work together locally and globally. The Knowledge Center’s impact on learning will be sweeping in scope and interdisciplinary in nature.

High-tech learning tools will support all of the Knowledge Center's learning activities. Children who use a Knowledge Center may consult a touch-screen terminal to choose resources from a vast array available in the Center or from distant locations via interlibrary loan; use their own palm-sized computers to download stories or information they want to take home to share with family members; create video and computerized electronics stories or term papers; participate in lifelike teleconferences with their peers in dozens of countries. Cooperate via satellite and computer networks with far-flung learning pals to address global problems. The technology and instant communication will be an essential and enriching element of their daily learning.

The facility will house informational materials (both print and electronic) and learning technologies appropriate for students of all ages, but the walls of this building will not imprison the information or learning devices. Instead, fiber optic pathways that extend across and off the campus will allow learners twenty-four-hour access to much of the information.

In order to delineate the concepts underlying this program, this proposal is structured into the following four sections:


Describes foundational educational concepts that underlie a Knowledge Center.

2. Achieving the Vision.
Explains how the educational ideas can come to life in a Knowledge Center.

3. Reaping the Benefits.

Focuses on benefits that will accrue to students.

4. Sharing the Vision.

Discusses ways in which other groups will also benefit from a Knowledge Center.

Envisioning Our Mission

Most children enter school at the age of four or five and exit some twelve years later. Many eventually rejoin the schooling stream, some leaving and returning several times over the next decades. Just what is the goal of all this schooling? How should a school shape its students? What final forms do we aim to create?

Current leaders in school restructuring, reform, and renewal efforts describe desirable outcomes. These ideas are presented in three layers of Overriding Goals, Supporting Skills and Knowledge, and Core of the Mission

1. Overriding Goal

Our broadest outcome is effective and productive citizens who both enrich and respect their country and their world. Socially, they must function capably in multi-cultural settings; economically, they must be keen global competitors.

2. Supporting Skills and Knowledge

Effective and productive world citizens have gained supporting skills and knowledge in school. They can cooperate and work on teams when necessary. They have baseline "enabling skills" (abilities in reading, writing, computer operation, and mathematics) that support additional learning in science, history, and other concept-rich subjects. Finally, because the world of information is expanding exponentially, world citizens know how to interact with the country's knowledge infrastructure to locate, use, and create information as needed. The four types of supporting skills and knowledge --human relations abilities, enabling skills, foundational knowledge, and information skills--can be discussed separately but cannot be isolated in the learning process. Instead, learning in all four areas is intertwined. Enabling skills are practiced and improved in a social context, and foundational knowledge can be constructed successfully when students must identify and locate information for themselves.

3. Core of Our Mission

In the past, many considered the development of supporting skills and foundational knowledge to be the primary goals of education. However, we agree with our contemporaries who insist that schooling has more important aims. We believe that the core of our mission is to empower students to use their supporting skills and knowledge to learn independently; to address academic, personal, career, and community problems (individually or in a group); and to make thoughtful decisions. Bordering this mission core are additional activities unique to university
faculty and students. They will use the Center as a research setting where they can observe real learning in action and develop and apply educational theory. This framework of ideas supports a Knowledge Center program. Our next step is to enliven the framework by showing how the vision can be achieved.

**Achieving The Vision**

Three fourth-graders dash through the Knowledge Center doors and hurry over to their friend, Mr. Simmons, a school library media intern. Their questions overlap: "Is it time for our conference yet? Can you help us get started? Will you look at the questions we've written?" Mr. Simmons smiles at their energy and leads them to a nearby where the books, videotapes, artifacts, and computer printouts full of information about folktales are arranged. Together, they examine and polish the children's questions. Finally, Mr. Simmons announces, "OK, I think we're ready." They all move to the conference corner of the Knowledge Center.

The children, barely able to sit still, perch on the edges of three small chairs while Mr. Simmons adjusts the complex equipment in the corner. Suddenly, directly in front of them three more images appear, projected into the air, and the children begin a long-distance conference with three youngsters at an experimental United Nations school in Somalia. Together, the six trade folktales from their divergent cultures and explore the messages those tales convey. Mr. Simmons directs the exchange when necessary, and when the 30-minute conference is over, sends the children back to their classroom to report their findings and share the videotaped conversation with their classmates. There, students will include the information in a chapter of the class book they are writing about folktales from around the world.

This scene hints at myriad educational activities that build the supporting skills and knowledge. The children involved had worked cooperatively to accomplish a complex task. They had identified their information need, located materials, used them to develop questions for their conference, participated in the long-distance discussion, and presented their findings to classmates. The other children in the class will take the newly created information, write about it, draw appropriate illustrations, edit it, and add it to a long-term class project.

The students will have used reading, writing, presentation, computer, information, and human relations skills and will have to added to their foundational knowledge in social studies (especially multi-cultural concepts), literature, and science (because many of the folktales describe scientific phenomenon that can be investigated). An undercurrent of the lesson is the collaborative planning and unit development by the library media intern and the classroom teacher.

Can this scene ever be a reality? Advancing technologies are leading us in this direction, but the mere existence of technologies does not guarantee an impact on the learning of children. After all, the technologies may exist but not be widely available in schools, or the adults who work with children may not be trained to use the high-tech equipment to support compelling learning activities. A Knowledge Center program will provide both necessary access to and appropriate experience with using technology to foster learning scenes such as the one above.

The Center's program will focus on three main tasks:
• Fostering, originating, and developing learning opportunities.
• Preparing educators for present and future roles.
• Providing essential resources and technologies.

**Task 1: Fostering, Originating, and Developing Learning Opportunities.**

The learning opportunities that originate in a Center will be supported by current research in cognitive science. These investigations into how people learn tell us that every student must construct his or her own understandings of the world based on experiences. As educators, we now realize that we cannot give students knowledge; but we can give them learning experiences in places like a Knowledge Center to that they can create their own understandings.

**Task 2: Preparing Educators for Present and Future Roles.**

A Center’s learning opportunities will also demonstrate the power of a new way of thinking about teaching. Aspiring classroom teachers and school library media specialists will move away from the image of themselves and their textbooks as the sole dispensers of knowledge. Instead, they will use a Knowledge Center's resource-rich environment to help students discover their own paths to learning.

Educational planning teams will be the norm for a Knowledge Center. School library media specialists, instructional designers, technicians, and other stakeholders will pool their ideas, special skills, and talents to create integrated learning experiences that break down the walls of subject domains and allow children to interact with a world of ideas.

These beginning educators will leave their Knowledge Center experience with a vision of educational practice at its best and with the skills to implement that vision in other locations around the state and country.

**Task 3: Providing Essential Resources and Technologies.**

A range of materials and technologies must be available to support the learning experiences of individual students so that each can learn in the way that suits him or her best. Some of the materials and technologies will be traditional. For example, print resources will probably always have a place in education. Other parts of the collection (such as a wide-ranging set of multicultural realia that will allow a hands-on approach for children studying world cultures) may be less traditional but still not high-tech.

More futuristic resources will also be available. The Center will house networked CD-ROM and other similar technologies learning stations, laser disk information access, and satellite downlink and uplink capabilities. We cannot predict the entire range of technologies that might be appropriate within the next fifty years. For that reason, a Knowledge Center facility must be large and flexible enough to accommodate rapid technological advancement.

The materials and equipment housed in a Knowledge Center will range not only from traditional to futuristic but also from beginning to advanced. For primary and secondary students, resources appropriate for kindergarten through twelfth grade will be available. The collection
will truly be a rich and deep database that includes information for education as well as about education.

Access to these exciting learning resources and technologies will have to be as open as possible. Kindergarten through twelfth grade students will use the Center at all times of the day to work on class and individual projects and participate in distance learning. Throughout the day and evening hours, the Center should serve as a research site where educational theory is developed, applied, examined, and reflected upon.

Because of these multi-type activities, we recommend that a Knowledge Center implementation plans include extended physical access to the facility and that twenty-four hour electronic access be available to as many resources as possible.

Reaping The Benefits

After the last bell of the school day, a diverse group of professionals hurries into the Knowledge Center. Brad Simmons, a school library media intern, starts the meeting. "We're here to begin planning the electronic term paper project for the eleventh grade U.S. history students. Let's start by reviewing what experiences the students in those classes have had with locating and using information and with the production equipment." The two history teachers and their teaching intern describes the students' background. Brad hesitates when they finish, unsure of what to ask next. The school media specialist with whom he is working steps into the discussion. "Let's shift our thinking a little now and try to delineate the essential questions we want the students to address, the content and processes they will use, and the product we want them to create." As a part of this exchange, the technician in the group describes possible production activities. Students will be able to use the Center's camcorder to videotape footage of interviews or local historical scenes, integrate those scenes with segments pulled from the U.S. history laser disk set, add their own narration, and create a computerized path through the information. This year, they will also be able to ask learning partners at schools around the world to videotape a specific scene and send it to them via the satellite network.

Gradually the structure of the unit takes form. By the end of an hour, the group has a plan that divides teaching and preparation responsibilities among all the members and sets a tentative schedule.

A Knowledge Center will provide a learning platform for hundreds of students a year. Those who will most directly benefit from the program include

- Students attending the school
- Faculty and staff
- Parents and other stakeholders

Expanded Access to Information.

Foundational information related to every subject domain and appropriate for every student at the school will be available in or through a Knowledge Center. Students will use telecommunications systems to locate information across the world. Human experts will be a part of this information network and will communicate with students as time and technology
permit. All of these activities involve students in interacting with the world's "knowledge infrastructure", an essential supporting skill.

New Focus on the Processes of Using and Creating Information.

Once students have found the information for a challenging assignment in perhaps social studies or science, they must read, interpret, analyze, evaluate, and synthesize it. Most of these activities involve refining their "enabling skills", a process that will be made more effective by the available technologies. Appropriate computer software allows mathematical analysis and display, word processing, desktop publishing, and graphic design. Students will also use the World Wide Web to create individual and group projects like that planned by Brad Simmons and the planning team at the first of this section.

Access to Guidance from Well-Trained Teaching Teams.

The information inundation could be overwhelming, but at each step of the process, students will be supported by planning team members. Each professional on the team will be a specialist but will also be able to act as a generalist. The teacher will be the information-access-and-use (or process) specialist; the technologist and technicians will support equipment use.

Dealing Positively With Change

Perhaps as important as the collaborative planning skills and the technological abilities will be the attitude toward change fostered by a Knowledge Center program and facility. Educators who experience the program will feel the reality of new working environments. They will learn to accept (yet evaluate rigorously) new teaching approaches.

Sharing The Vision

A dozen young teenagers enter the Knowledge Center singly and in small groups and hurry to the adjacent distance learning room. The last trio arrives just as their teacher's image appears on a large video monitor in the front of the room and greets them in Japanese, the language and culture the class is studying. Because the students are clearly visible on the teacher's monitor at her broadcast site in a distant state, she is able to speak individually to each, asking for an update of their current project on Asian art.

One 13-year-old girl speaks eagerly, directing her comments toward the monitor where unobtrusive television cameras photograph her and send the image to her teacher's location. "I got the most incredible video from a library in Michigan about the art of paper making. I finally understand why it's an art form in the Orient." "Great!" the teacher responds. "Mr. Simons, can you and Andrea share art of that video with us during our next class?"

Brad, the school library media intern, sits slightly behind the students but still within range of the cameras. As site facilitator he provides logistical and informational support under the supervision of the Center's professional staff. "We can do better than that! Andrea has made arrangements with her art teacher to do a paper-making demonstration for the class. She'll use the video to give background information. Then, the next week if there is time, Andrea hopes to
have a speaker from the University who will discuss the effect that the invention of paper had on China and later on Japan.” As this interchange takes place, several visitors at the side of the room watch and take notes.

Distance education experiences are occurring more and more frequently across the world, but classes like the one above that is fully supported with advanced technology and information access are still relatively rare. Educators understand that in theory the classes can take place, but believing in the reality is difficult until the experience is made concrete.

**Conclusion**

The Knowledge Center described in the “White Paper” opened in October 1997. The project was guided by Donna Shrum, Library Media Specialist, FSUS and Dr. Tom Hart, Professor, Information Studies. The building was planned and designed to reflect the concepts in this document.