Primary School Curriculum

Information Technology (IT)

MINISTRY OF EDUCATION
Bermuda
2001

FOREWORD

Quality curriculum is basic to any educational programme. The written curriculum must provide the structure and substance of what is taught to all students. The written curriculum is a guide to teachers to ensure that the knowledge, skills, competencies and resources students need in order to learn are provided during instruction.

In particular, it is acknowledged that knowledge is virtually infinite in that it is continually changing and expanding as "new" knowledge is developed and "old" knowledge is refined. In addition the skills and competencies that students need change as the environment in the total community changes. It is important therefore that a school system has a structure for the instructional programme that provides direction, focus, flexibility and state-of-the-art thinking about each content area.

Because of its strategic geographical position, Bermuda has been influenced continuously by the changes in the relationship between the continents bordering the Atlantic -- North and South America, Africa and Europe. The current interest in the globalization of the world community allows Bermuda to build on its strength in international relations. It is essential that our students become accustomed to viewing the entire world as the area in which they must live and grow. They must integrate knowledge across all subjects in preparation for their adult life. Our curriculum guides must be viewed from this perspective.

A team of teachers, education officers and other persons within the school system and community, drawing from their collective experience in working with young people, has developed this curriculum guide. Input from community representatives on each Curriculum Advisory Committee has assisted us in Bermudianizing the curriculum. All of the contributors share both the pride and the responsibilities of authorship. This guide represents the essential elements of education in Bermuda's primary schools.

J. T. Christopher, Ph.D.
Chief Education Officer

ACKNOWLEDGEMENTS

The Information Technology primary school curriculum was developed by teachers with the leadership and support of Patricia Callender, Education Officer, Information Technology. This writing team was comprised of diligent and devoted teachers. Appreciation is extended to these teachers for their ability to collaborate amicably and collegially in the production of this professional document. The members of the writing team were:

Sherlyn Jones
Jennifer Williams

The restructured curriculum development process began in 1994 under the leadership of Dr. Helen Stemler, Restructuring Curriculum Coordinator. During 1994-1995, the writing teams in the various content areas developed the frameworks for the entire curriculum development process. From 1995-1997 the curricula for the middle level were created. Thanks also to Dr. Gina Tucker, Curriculum Coordinator 1998-1999. Special thanks to Mrs. Kalreta Conyers-Steede, Education Officer Business Studies, who coordinated the final production of these curriculum documents 1999-2001.

These documents would not have been completed without the support of a very hardworking, dedicated group of people - the secretarial/support staff who typed and assisted with numerous tasks associated with completing these documents. This group includes the following persons:

Johnnel Booth
Marilyn Dyer
Lavern Furbert
Raquel Furbert
Terrylynn Gibbons
Donna Jacobs
Judy Lawrence
Kim Simons
Theresa Simons
Wanda Stuhlpfarrer
Deshan Thompson
Rochelle Trott

Diana Madeiros – Professional Editor

CONTENTS

Page

OVERVIEW

The aim of the primary school is to provide for the academic achievement, personal development and group citizenship of early adolescents. In keeping with this aim, the organizational patterns appropriate to the developmental needs of five to twelve year-old students need to be provided.

The curriculum is composed of a common body of knowledge with emphasis placed on mastery skills and achievement measured according to each student's abilities. The development of positive attitudes toward learning, self and others is a basic component of Bermuda's primary school programme. The programme is based on the belief that all students make every effort to succeed when in an environment that fosters and encourages success, regardless of their background or previous level of achievement. Educational development at the primary level should provide adequate preparation for continued experiences. To create an atmosphere of accomplishment in which each student has opportunities for growth, emphasis is placed on:

- opportunities for sharing enriching experiences, creative expressions and exposure to ideas
- enhancement of personal abilities with opportunities to pursue and express them through diversity and supportive activities
- development of a growing sense of responsibility, integrity, self-discipline, reliable judgement and self-respect in each student
- encouragement of acceptance of their roles and responsibilities in the educational process with confidence, enthusiasm and appropriate social and academic behaviours
- provisions of time and opportunity for ethical growth and for the development of responsible values and character

The curriculum guide contains three (3) sections beginning with the Introduction. The cited twelve goals of education direct instructional outcomes in all primary school subjects. Specifically, a curriculum framework has been approved for each subject and is to be used as the basis for the subject specific philosophy, goals and subgoals, performance indicators and scope and sequence. Effective utilization of this framework will establish continuity and progression of instruction throughout all year levels.

The second section of this guide delineates the primary school programme of instruction and contains an overview for Phase A and B that includes: primary rationale, year level requirements, adopted materials of instruction, phase outline, correlation matrix and modules. It is expected that all teachers will focus instruction on the established curriculum objectives outlined in the modules. The final section of this guide contains resources of valuable support for teachers.

GOALS OF EDUCATION

In Bermuda, the Goals of Education provide the direction for primary level education. These twelve (12) goals enable primary level students to:

- develop responsiveness to the dynamic process of learning
- develop resourcefulness, adaptability and creativity in learning and living
- acquire the basic knowledge and skills needed to comprehend and express ideas through words, numbers and other symbols
- develop a wellness approach to life
- gain satisfaction from participating in and appreciating the various forms of artistic expression
- develop a feeling of self-worth
- develop values related to personal and ethical beliefs and to the common welfare of society
- develop an understanding of the role of the individual within a family unit, the role of the family within society and the role of our society in a global context
- develop a sense of personal responsibility in society at the national and international levels
- acquire skills that contribute to self-reliance in solving practical problems in everyday life
- acquire skills and attitudes that will lead to satisfaction and productivity in a career
- develop respect for the environment and a commitment to the wise use of resources.

CURRICULUM AND INSTRUCTION FOR ALL STUDENTS

All primary schools will have common programmes designed to offer nine subjects to all students and to give them a knowledge base which will equip them with a foundation that will prepare them to move to the middle school level. There will be a basic core curriculum that will include English language arts, mathematics, science and social studies. These subjects will be supported by a variety of encore subjects, such as health education, physical education, information technology, music and visual arts. Information technology will also be integrated into all subject areas. An integrated curriculum is a meaningful approach to primary instruction that assists students to transfer knowledge within and across all subjects and apply skills and processes developed in subjects to real life Bermuda issues.

It is expected that the implemented curriculum will be based on the premise that all students can learn and that instruction should be differentiated to meet the unique needs of the learner. Further, it is expected that the primary school curriculum will be implemented from a Bermudianized and multicultural perspective as much as is feasible.

INFORMATION TECHNOLOGY PHILOSOPHY

Bermuda has entered the new millennium with technological advances appearing on the scene at warp speed. Technology rich working environments, Internet access readily available in homes and wireless digital communications keeping everyone in touch with everyone else-no longer can our island consider itself another world. For these reasons Information Technology (IT), which provides young people with those necessary skills through which they can access and meaningfully interpret information at their disposal, are a critical component of every student's education. Additionally, students cannot wait until they graduate to begin to develop skills with the tools prevalent in their world but must work with the present technologies as they evolve into the technologies of their own futures.

At Learning Phase A students learn about technology as they use it to develop readiness skills and to explore a number of creative programmes. At Learning Phase B students are exposed to a number of information technology applications as they learn subject matter content. They also learn to use IT as a tool and about the impact that IT is having on their lives and society. At Learning Phase C students refine their skills with computer applications through the Business Studies programme. Students apply these and other skills as they use a variety of technologies within the various disciplines. At Learning Phase D the curriculum can be divided into two sections. The Computer Science courses I and II are intended to provide every student with the basic skills and knowledge needed to live and learn in our highly technical environment. These courses are compulsory. The remaining elective courses are designed to provide students with knowledge and skills in specialized areas such as web bases applications, multimedia and hardware/networking maintenance. In each course students are encouraged to build portfolios that will illustrate their interest and growth during their senior years of study. A student's involvement with IT should create a sense of enjoyment, satisfaction and fun through learning while building skills needed for their future.

INFORMATION TECHNOLOGY

GOAL 1	GOAL 2	GOAL 3	GOAL 4	GOAL 5	GOAL 6
OPERATION AND TECHNOLOGY CONCEPTS	SOCIAL AND ETHICAL ISSUES ASSOCIATED WITH TECHNOLOGY	TECHNOLOGY PRODUCTIVITY TOOLS	TECHNOLOGY COMMUNICATION TOOLS	TECHNOLOGY RESEARCH TOOLS	TECHNOLOGY FOR PROBLEM SOLVING

CONTENT AREAS

- INFORMATION TECHNOLOGY COMPONENTS AND THEIR USE
- APPLICATIONS
- PROGRAMMING
- INFORMATION TECHNOLOGY IN SOCIETY AND THE WORKPLACE

Information Technology - P1
Level Code: P1 IT

MINISTRY OF EDUCATION
Bermuda
2001

GOAL 4 TECHNOLOGY COMMUNICATION TOOLS

STUDENTS WILL DEVELOP SKILLS WITH TECHNOLOGY COMMUNICATION TOOLS.

Subgoal 4.1 Students use telecommunications to collaborate, publish and interact with peers, experts and other audiences.

Subgoal 4.2 Students use a variety of media and formats to gather and communicate information and ideas effectively to multiple audiences.

Subgoal 4.3 Routinely and efficiently use on-line information resources to meet the needs for collaboration, research, publications, communications and productivity.

GOAL 5 TECHNOLOGY RESEARCH TOOLS

STUDENTS WILL DEVELOP SKILLS WITH TECHNOLOGY RESEARCH TOOLS.

Subgoal 5.1 Students use technology tools to locate, evaluate and collect information from a variety of sources.

Subgoal 5.2 Students use technology tools to process data and report results.

Subgoal 5.3 Students research, evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.

GOAL 6 TECHNOLOGY FOR PROBLEM SOLVING

STUDENTS WILL DEVELOP THE ABILITY TO USE TECHNOLOGY TO SOLVE PROBLEMS AND MAKE DECISIONS.

Subgoal 6.1 Students use technology resources for solving problems and making informed decisions.

Subgoal 6.2 Students employ technology in the development of strategies of resolving problems in the real world.

Subgoal 6.3 Use and apply a variety of programming strategies and techniques to solve problems.

INFORMATION TECHNOLOGY
GOALS AND SUBGOALS

GOAL 1 **OPERATION AND TECHNOLOGY CONCEPTS**

STUDENTS WILL DEVELOP THE SKILLS TO OPERATE VARIOUS TECHNOLOGIES AND AN UNDERSTANDING OF TECHNOLOGICAL CONCEPTS.

Subgoal 1.1 Students develop a sound understanding of the nature and operation of technology systems and can make informed choices among technologies.

Subgoal 1.2 Students are proficient in the use of technology.

GOAL 2 **SOCIAL AND ETHICAL ISSUES ASSOCIATED WITH TECHNOLOGY**

STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE SOCIAL, ETHICAL AND HUMAN ISSUES ASSOCIATED WITH TECHNOLOGY AND ITS USE.

Subgoal 2.1 Students understand the ethical, cultural and societal issues related to technology.

Subgoal 2.2 Students practice responsible use of information technology systems, and software and advocate legal and ethical behaviours amongst peers, family and community regarding its use.

Subgoal 2.3 Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits and productivity.

GOAL 3 **TECHNOLOGY PRODUCTIVITY TOOLS**

STUDENTS WILL DEVELOP SKILLS WITH TECHNOLOGY PRODUCTIVITY TOOLS.

Subgoal 3.1 Students use technology tools to enhance learning, increase productivity, and promote creativity.

Subgoal 3.2 Students use productivity tools to construct technology-enhanced models, prepare publications, multimedia and to produce other creative works.

Subgoal 3.3 Develop the ability to use technology tools and resources to manipulate information, use higher order thinking skills (analysis and synthesis) and communicate.

GOAL 1	Students will develop the skills to operate various technologies and an understanding of technological concepts.			
INFORMATION TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS - P2 Learning Phase A**	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
1.1 Students develop a sound understanding of the nature and operation of technology systems and can make informed choices among technologies.	with assistance communicate with others about technology using developmentally appropriate and accurate terminology	discuss common uses of technology in daily life and advantages and disadvantages those uses provide	N/A	students develop a sound understanding of the nature and operation of technology systems and can make informed choices among technologies
1.2 Students are proficient in the use of technology.	with assistance successfully operate a variety of technologies and developmentally appropriate multimedia and technology resources for directed and independent learning activities	successfully operate a variety of technologies and developmentally appropriate multimedia and technology resources for directed and independent learning activities	N/A	students are proficient in the use of technology

*Integrated into Middle School Business Studies Curriculum

GOAL 2	Students will develop an understanding of the social, ethical and human issues associated with technology and its use.			
INFORMATION TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS - P2 Learning Phase A**	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
2.1 Students understand the ethical, cultural and societal issues related to technology.	work cooperatively and collaboratively with peers and demonstrate positive social and ethical behaviours when using technology	discuss common uses of technology in daily life and advantages and disadvantages those uses provide	N/A	students understand the ethical, cultural and societal issues related to technology
2.2 Students practice responsible use of information technology systems, and software and advocate legal and ethical behaviours amongst peers, family and community regarding its use.	practice careful and responsible use of technology systems and software	discuss basic issues related to responsible use of technology and information; and describe personal consequences of inappropriate use	N/A	students practice responsible use of information technology systems, and software and advocate legal and ethical behaviours amongst peers, family and community regarding its use
2.3 Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits and productivity.	students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits and productivity	students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits and productivity	N/A	students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits and productivity

*Integrated into Middle School Business Studies Curriculum

GOAL 3	Students will develop skills with technology productivity tools.			
INFORMATION TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS - P2 Learning Phase A**	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
3.1 Students use technology tools to enhance learning, increase productivity, and promote creativity.	use developmentally appropriate technology resources for communication and illustration of thoughts, ideas and stories	use general purpose and content specific productivity tools and peripherals to support personal productivity, and to facilitate learning	N/A	students use technology tools to enhance learning, increase productivity, and promote creativity
3.2 Students use productivity tools to construct technology-enhanced models, prepare publications, multimedia and to produce other creative works.	create developmentally appropriate products with support from teachers, family members or students partners	use technology tools for individual and collaborative writing, communication and publishing activities to create knowledge products for a variety of audiences	N/A	students use productivity tools to construct technology-enhanced models, prepare publications, multimedia and to produce other creative works
3.3 Develop the ability to use technology tools and resources to manipulate information, use higher order thinking skills (analysis and synthesis) and communicate.	use a variety of developmentally appropriate media and technology resources for directed and independent learning activities	with some guidance, develop the ability to use, developmentally appropriate technology tools and resources to manipulate information, use higher order thinking skills and communicate	N/A	develop the ability to use technology tools and resources to manipulate information, use higher order thinking skills (analysis and synthesis) and communicate

*Integrated into Middle School Business Studies Curriculum

GOAL 4	Students will develop skills with technology communications tools.			
INFORMATION TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS - P2 Learning Phase A**	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
4.1 Students use telecommunications to collaborate, publish and interact with peers, experts and other audiences.	use technology resources for communication and illustration of thoughts, ideas and stories	use technology tools for individual and collaborative writing, communication and publishing activities to create knowledge products for various audiences	N/A	students use telecommunications to collaborate, publish and interact with peers, experts and other audiences
4.2 Students use a variety of media and formats to gather and communicate information and ideas effectively to multiple audiences.	gather information and communicate with others using telecommunications, with support from teachers, family members or student partners	develop the ability to use telecommunications efficiently and effectively to access remote information and communicate with others in support of direct and independent learning and for pursuit of personal interests	N/A	students use a variety of media and formats to gather and communicate information and ideas effectively to multiple audiences
4.3 Routinely and efficiently use on-line information resources to meet the needs for collaboration, research, publications, communications and productivity.	with assistance uses on-line information resources to meet the needs for collaboration, research, publications, communications and productivity	develop the ability to use on-line information resources to meet the needs for collaboration, research, publications, communications and productivity	N/A	routinely and efficiently use on-line information resources to meet the needs for collaboration, research, publications, communications and productivity

*Integrated into Middle School Business Studies Curriculum

GOAL 5		Students will develop skills with technology research tools.			
INFORMATION TECHNOLOGY		PERFORMANCE INDICATORS			
	Sub Goals	PS - P2 Learning Phase A	P3 - P6 Learning Phase B	M1 - M3* Learning Phase C	S1 - S4 Learning Phase D
5.1	Students use technology tools to locate, evaluate and collect information from a variety of sources.	use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital cameras, drawing tools) for communication and illustration of thoughts, ideas and stories	use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem-solving, self directed learning and extended learning activities	N/A	students use technology tools to locate, evaluate and collect information from a variety of sources
5.2	Students use technology tools to process data and report results.	N/A	use technology resources for problem solving, self-directed learning and extended learning activities; with assistance determine when technology is useful and select the appropriate tools and technology resources to address a variety of tasks and problems	N/A	students use technology tools to process data and report results
5.3	Students research, evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks.	N/A	N/A	N/A	students research, evaluate and select new information resources and technological innovations based on the appropriateness to specific tasks

*Integrated into Middle School Business Studies Curriculum

GOAL 6	Students will develop the ability to use technology to solve problems and make decisions.			
INFORMATION TECHNOLOGY	**PERFORMANCE INDICATORS**			
Sub Goals	**PS - P2 Learning Phase A**	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
6.1 Students use technology resources for solving problems and making informed decisions.	use technology resources for communication and illustration of thoughts, ideas and stories	evaluate electronic information sources	N/A	students use technology resources for solving problems and making informed decisions
6.2 Students employ technology in the development of strategies of resolving problems in the real world.	N/A	use technology and telecommunications resources for problem-solving activities to develop solutions or products	N/A	students employ technology in the development of strategies of resolving problems in the real world
6.3 Use and apply a variety of programming strategies and techniques to solve problems.	N/A	N/A	N/A	use and apply a variety of programming strategies and techniques to solve problems

*Integrated into Middle School Business Studies Curriculum

INFORMATION TECHNOLOGY COMPONENTS AND THEIR USE	INFORMATION TECHNOLOGY SCOPE AND SEQUENCE			
	PS - P2 Learning Phase A	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
Hardware	• basic computer components • computer care and use • key functions: letters, numbers, capitals, other characters • mouse operation • finger placement • other technologies	• computer components • computer care • operate hardware • printer operation • computer concepts • managing electronic information	N/A	• computer components other technologies • proper handling and use • computer concepts • keyboarding • printer operation • computer concepts • managing electronic information • trouble shooting and repair
Software	• handling and care of software • log on/off • navigating software • multimedia	• launching software • open close restore window • navigating software • help menu • multimedia	N/A	• modifying software options • multimedia
Communication	N/A	• navigating web sites • performing simple internet searches • electronic mail	N/A	• navigating the WWW • electronic mail • web-based technologies • network design • network implementation • network maintenance

*Integrated into Middle School Business Studies Curriculum

APPLICATIONS	INFORMATION TECHNOLOGY SCOPE AND SEQUENCE			
	PS - P2 Learning Phase A	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
Productivity Tools	• simple painting tools • open/save files • simple drawing tools • adding graphics • word processing • editing using a word processor	• word processing tools for productivity • editing using a word processor • enhancing your work with graphics • drawing/paint software to produce and print graphics • appropriate tool selection	N/A	• word processing and desktop publishing tools • spreadsheets(charts, graphs) • advanced desktop publishing • graphics
Knowledge Tool	• using software to communicate concepts and interests • skill practice • electronic correspondence	• using software to explore concepts and interests • skill practice • beginning spreadsheets: number concepts • beginning databases: organizing information • conducting keyword searches using electronic resources	N/A	• developing learning tools and materials • surveying the WWW • conducting research using electronic resources and the internet
Problem Solving	• computer simulations	• computer simulations	N/A	• designing simulations • conducting investigations

*Integrated into Middle School Business Studies Curriculum

PROGRAMMING	INFORMATION TECHNOLOGY SCOPE AND SEQUENCE			
	PS - P2 Learning Phase A	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
Web Page Design	N/A	N/A	N/A	• web page design
Programming Languages	N/A	N/A	N/A	• computer-aided design • robotics • karel • systems analysis • logic
Multimedia	N/A	N/A	N/A	• website maintenance

*Integrated into Middle School Business Studies Curriculum

INFORMATION TECHNOLOGY IN SOCIETY AND THE WORKPLACE	INFORMATION TECHNOLOGY SCOPE AND SEQUENCE			
	PS - P2 Learning Phase A	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
Appreciation	• displays enjoyment when using technology • creative expressions • technology as a shared resource • computer care	• technology benefits • creative expressions • role models	N/A	• creative expressions
Technology In Our Lives	• computer around us • working with technology • you, me, and technology	• computer in daily use • current technology issues: • privacy, ethics, security, etc. • you, me and technology	N/A	• current technology issues: privacy, ethics, security, etc. • careers

*Integrated into Middle School Business Studies Curriculum

INFORMATION TECHNOLOGY IN SOCIETY AND THE WORKPLACE Cont'd.	INFORMATION TECHNOLOGY SCOPE AND SEQUENCE			
	PS - P2 Learning Phase A	**P3 - P6 Learning Phase B**	**M1 - M3* Learning Phase C**	**S1 - S4 Learning Phase D**
Keyboarding	• touch skills • posture • alpha keyboard • homerow keys	• touch skills • posture • ergonomics • alpha keyboard • numeric key pad • punctuations • formatting text	N/A	N/A

*Integrated into Middle School Business Studies Curriculum

REFERENCES

Qualifications and Curriculum Authority. National Curriculum for England. Department of Education and Employment, 1999.

National Educational Technology Standards for Students. International Society for Technology in Education, 1998.

Information Technology K – 7 Integrated Resource Package. British Columbia Ministry of Education, 1996.

INTRODUCTION TO PRIMARY SCHOOL CURRICULUM

The primary school level continues to provide learning experiences that satisfy the natural curiosity of young children, stimulate their imagination and enhance their appetite for learning. The most important function of the primary level of education is the mastery of the fundamental skills necessary for the continued pursuit of learning.

Primary school education helps all children to:

- acquire permanent literacy and numeracy skills
- communicate effectively
- think scientifically and logically
- develop manipulative skills, artistic talents and physical skills
- cultivate good health habits
- develop spiritual, ethical and social values

The primary school curriculum is a written guide that identifies the goals and curriculum objectives that teachers establish for students to achieve. It makes visible the articulation necessary for preschool through senior level programmes so that students do not have large gaps in their understanding, skills and competencies. Its scope and sequence also allows teachers to plan linkages across the curriculum so those cross-curricular connections can be made more easily between and among various subjects.

Given the above characteristics, the primary school curriculum is intended to provide students opportunities to:

- discuss, explore, investigate and hypothesize
- find solutions to real problems
- utilize both concrete and abstract reasoning skills
- process information at formal operations level

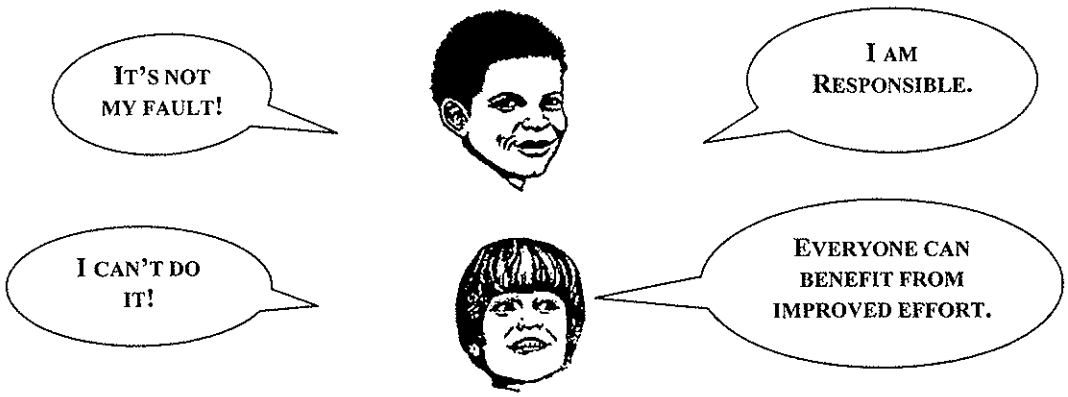
The following section outlines the curriculum to be taught in the following areas in Bermuda's primary schools.

- English Language Arts
- Mathematics
- Science
- Social Studies
- Health Education
- Information Technology
- Physical Education
- Music
- Visual Arts

BELIEFS ABOUT STUDENT LEARNING

Where we Were	Where we want to Go
CAUSES	
External Luck Task	Internal Ability Effort
BELIEFS	
Ability defines achievements Ability is limited Intelligence cannot change Intelligence has one dimension Teachers transmit knowledge	Effort improves performance Ability can be acquired Intelligence can be learned There are many intelligent behaviours Learners construct their knowledge
SELF-EFFICACY	
I can not do that I can not learn that	I can learn to do it I can learn the things that I need to know to enable me to do it
CONCEPTS	
Other – referenced They are better than me	Self-referenced I am good at Mathematics
EMOTION	
Negative or Neutral I hate school I do not care	Positive I like to do this Learning makes me happy

OUTCOME



CURRICULUM TIME ALLOTMENTS

Caroll's (1989) definition of instruction time is "opportunity to learn."

"The amount of time spent on schoolwork influences school learning."
(Evans-Ardriss, 2000; Berliner, 1990)

Instructional time and quality together are one of the three main factors that influences students' educational outcomes.
(Young et. al., 1996)

The Ministry of Education recognizes the importance of learning time and specifies the number of instructional days that government schools must provide. In addition to the number of days the Ministry also specifies the number of hours of instruction that should occur each school day. In order to determine the best way to apportion these hours, a review of literature was conducted to find exemplars, instances of learning times during school weeks in quality school systems. An assessment of current practices was also taken into consideration.

The Ministry of Education has four goals: literacy, numeracy, infusion of technology and staff development. As the Bermuda government schools introduce new curricula for primary education to support these goals, the curriculum allotment chart will provide guidance as to the optimum time that should be spent delivering each area of learning and also the optimum number of instructional hours that will best promote student literacy and numeracy.

The curriculum time allotment chart outlines the total of contact time between teachers and students at Learning Phase A summing to 1335. This figure is composed of 1300 contact minutes and 35 transition minutes. At Learning Phase B 1465 contact minutes plus 35 transition minutes sums to 1500 minutes per week.

Transition time is defined as the non-instructional time before and after some learning activity (Berliner, 1990). Recess and lunch allow for transitions that do not cut into instructional time. Other transitions occurs between subjects. The allocation of transitional time has been included to provide practical expectations.

It is important to note that transition minutes do not constitute lost time. The best-run classrooms require a short period of time to allow students to conclude their work, change their mind sets, put materials away and to prepare for the coming activity.

CURRICULUM TIME ALLOTMENT CHART

LEARNING PHASE A: PRESCHOOL- PRIMARY TWO*
AND
LEARNING PHASE B: PRIMARY THREE-PRIMARY SIX**

Subject	Learning Phase A PS-P2*		Learning Phase B P3-P6**	
	Minutes/Week (min/wk)	% Percentage of Time/Week	Minutes/Week (min/wk)	% Percentage of Time/Week
English Language Arts	450	34	450	30
Mathematics	330	24	330	22
Science	120	9	150	10
Social Studies	120	9	150	10
Health Education	60	4.5	60	4
Information Technology	60	4.5	90	6
Physical Education	90	7	120	8
Music	90/2	7	120/2	8
Visual Arts				
Transition Time	15	1	30	2
Totals	**1335**	**100%**	**1500**	**100%**

All subjects have been written with consideration of the allocated time for each discipline. Each subject is to be delivered as specified for the following duration:

Delivery Weeks/year: ..... 34 weeks
Optional Weeks: ..... 4 weeks (school events and special projects)
Total Weeks/year: ..... 38 weeks
======

NB: For the purpose of this document, time allocations have not been assigned to subjects at the PreSchool level.

Information Technology - P1
Level Code: P1 IT

MINISTRY OF EDUCATION
Bermuda
2001

PRIMARY SCHOOL
PHASE A OVERVIEW

Subject Title: Information Technology **Subject Code:** P1 IT

Time Allotted: 60 min/wk, (10 min. Keyboarding, 50 min. IT)

RATIONALE

The purpose of this primary school Information Technology curriculum is to prepare students to live and learn in highly technological environments by exposing them to a variety of these technologies and their uses as well as the impact they are having on our society and the workplace. It is designed to employ information technologies as learning tools, which allow students to present new information in interesting ways. Students will gain confidence with information technology individually and collaboratively problem solve and conduct research to explore a variety of topics related to other curriculum areas and their own interests.

These goals for students are achieved through:

- providing opportunities for students to learn with and about a variety of technologies
- the development of the skills needed to apply these technologies for different tasks in a variety of settings
- participation in activities that are meaningful, enjoyable and allow them to use their creativity

PRIMARY ONE (P1) REQUIREMENTS

The requirements for this level are as follows:

• **Performance Assessment** - Participation in discussions - Operation of computer system - Use of tools - Navigate software - Positive behaviour with technology - Use keyboarding techniques	**70%**
• **Product Assessment** - Portfolio containing computer generated documents designed for a variety of purposes and audiences	**30%**
• **Written Assessment**	**N/A**
Total	**100%**

MATERIALS OF INSTRUCTION (Adopted Text)

Milburn, MaryJo Fante. Basic Computer Skills. SRA, 2001

PHASE A OUTLINE

P1
Module Titles A - D

A. IT Components and Their Use 8
- computer components
- computer operation
- equipment care
- keyboard and mouse techniques
- software handling and care
- software navigation
- software operation
- other technologies

B. Computer Applications .. 20
- computer as a tool
- simple word processing tools
- simple graphics tools
- new
- edit
- document management
- computer applications for communicating
- computer applications for original work

P2
Modules Titles A - D

A. IT Components and Their Use 8
- computer components
- computer operation
- equipment care
- keyboard and mouse techniques
- software handling and care
- software navigation
- software operation
- other technologies

B. Computer Applications.. 20
- computer as a tool
- document, creation & editing
- document management
- more word processing tools
- more graphics tools
- computer applications for communicating
- computer applications for original work

P3
Modules Titles A - D

A. IT Components and Their Use 8
- computer components
- operation and care
- network use
- special purpose keys
- files
- window/desktop
- printing
- software resources
- Internet
- other technologies

B. Computer Applications ... 20
- computer as a tool
- edit menu
- file menu
- document management word processing programs and features
- simple formatting
- using ready-made graphics
- practising skills with graphics tools
- computer applications for communicating
- computer applications for original work

C. IT In Society and Workplace 6

- user etiquette
- sharing
- peer tutoring
- cooperation
- ethics
- positive behaviour
- consideration for others
- care and safety rules school property
- personal use
- pleasure
- learning
- technology around us
- technology at work

C. IT In Society and Workplace 6

- user etiquette
- sharing
- peer tutoring
- cooperation
- ethics
- positive behaviour
- consideration for others
- care and safety rules school property
- personal use
- pleasure
- learning
- technology around us
- technology at work

C. IT In Society and Workplace 6

- user etiquette
- sharing
- peer tutoring
- cooperation
- ethics
- positive behaviour
- consideration for others
- care and safety rules school property
- personal use
- pleasure
- learning
- technology around us
- technology at work

Subtotal 34	Subtotal 34	Subtotal 34
Optional Weeks 4	Optional Weeks 4	Optional Weeks 4
Total Weeks 38	Total Weeks 38	Total Weeks 38

PRIMARY SCHOOL

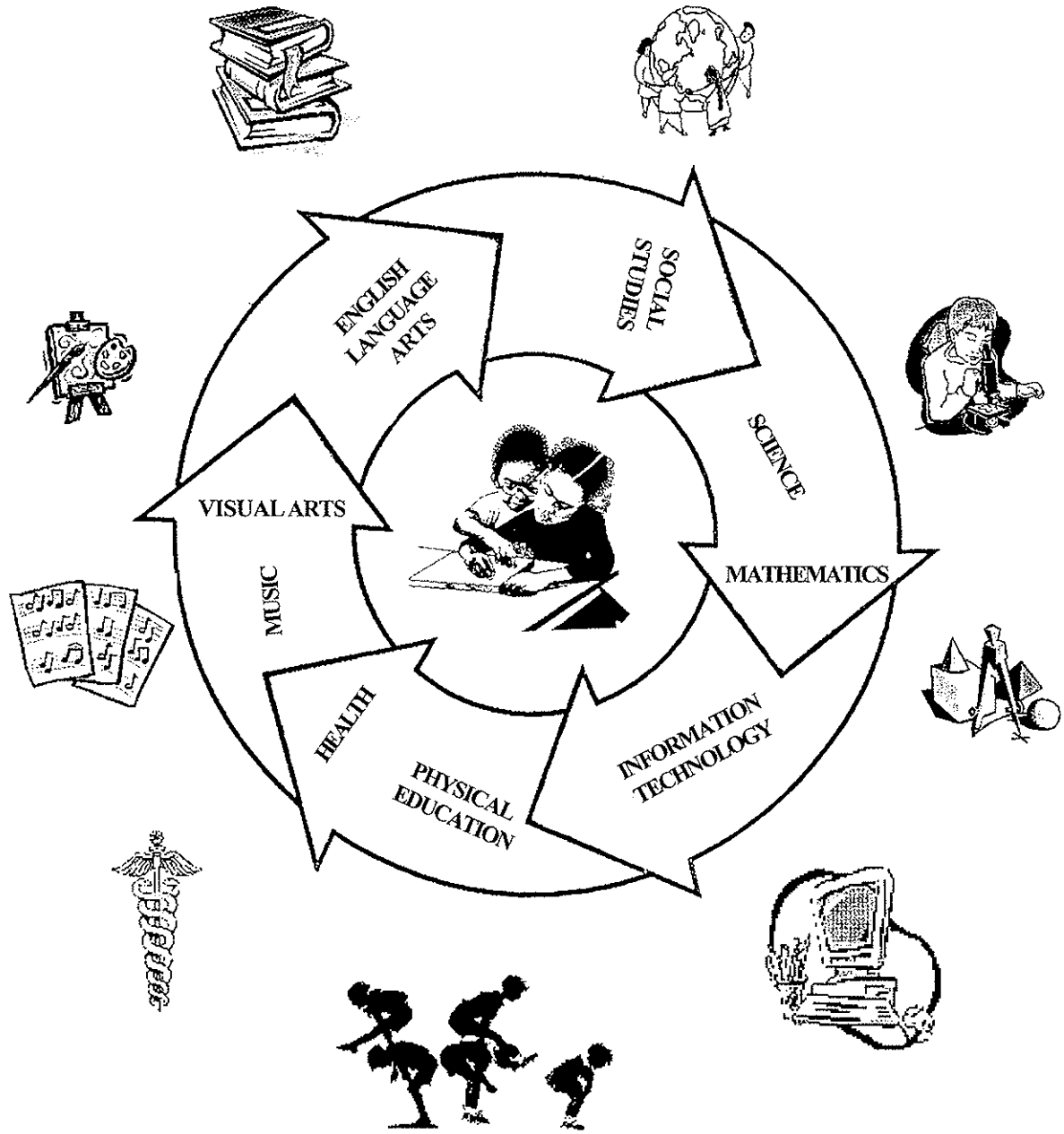
check one: P1 ☒ P2 ☐ P3 ☐ P4 ☐ P5 ☐ P6 ☐

Information Technology

GOALS			SUBGOALS	MODULE & CURRICULUM CORRELATION MATRIX		
1	Operation & Technology Concepts	1.1	Understand technology	x		x
		1.2	Use technology	x		x
2	Social & Ethical Issues Associated With Technology	2.1	Technology issues			
		2.2	Positive use and ethics			x
		2.3	Positive attitudes			x
3	Technology Productivity Tools	3.1	Enhance learning		x	
		3.2	Skills with tools		x	
		3.3	Manage & manipulate data		x	
4	Technology Communication Tools	4.1	Interaction with others			
		4.2	Communication of ideas		x	
		4.3	Tools & resources			
5	Technology Research Tools	5.1	Access data			
		5.2	Process data			
		5.3	Evaluate data & resources			
6	Technology For Problem Solving	6.1	Using resources			
		6.2	Apply solutions & strategies			
		6.3	Programming			
CONTENT STRUCTURE		IT Components And Their Use		x		x
		Applications			x	
		Programming				
		IT in Society And The Workplace				x
		MODULES		**A**	**B**	**C**

MODULE KEY

A - IT Components and Their Use
B - Computer Applications
C - IT in Society and the Workplace


ENGLISH LANGUAGE ARTS
SOCIAL STUDIES
SCIENCE
MATHEMATICS
INFORMATION TECHNOLOGY
PHYSICAL EDUCATION
HEALTH
MUSIC
VISUAL ARTS

Module A

INFORMATION TECHNOLOGY

Module Title: IT Components and Their Use

Sequence Reference: P1 IT-A

PHASE A				PHASE B		
PS	P1	P2	P3	P4	P5	P6
☐	☒	☐	☐	☐	☐	☐

Time allotted: 8 weeks

Subgoal Emphasis:

- 1.1 - 1.2 Operation and Technology Concepts

Content Focus:

- IT Components and Their Use

Curriculum Objectives:

At the end of this module, students will:

- identify the basic components of a computer system
- identify care of the basic components of a computer system
- demonstrate the correct use of the keyboard and mouse
- when assisted by the teacher, demonstrate the ability to start and shutdown a computer
- use log-on name or number
- with assistance open and save files
- handle software appropriately
- use age-appropriate software
- with assistance, navigate age appropriate software
- identify and successfully operate other technologies

Content Detail:

- basic components: monitor, keyboard, CPU, mouse, printer, headphones, speakers, CD-ROM drive, microphone, etc.;
- computer care: classroom help protocol, avoid dust, dirt, food, drinks, careless movements, direct sunlight (disks), use clean hands; safe distance from monitor, mouse pad;
- mouse techniques: move, point, click, drag;
- keyboard; numbers, letters, spacebar, return/enter,
- user protocol: log on. log off/ log in. log out; user name/number, start up, shut down;
- software care: careful handling of software diskettes, avoid magnetism, telephones; CD-ROM: inserting and removing a CD-ROM;
- types of software: interactive/talking books, educational software, writing software, colouring software, etc.;
- getting around the desktop: open file, save menu, save icon ; cursor, scroll bar, hourglass/busy,
- navigating software: icons: selection and de-selection of icons, icon meanings; menu: menu choices, pull-down; "hotspots" on the screen, forward and back arrows; exit programme, stop, quit; printing documents, print icon;
- VCR/ audio tape recorders, CD player, remote control, etc.

Module Title: IT Components and Their Use	**Sequence Reference:** P1 IT-A
Recommended Instructional Strategies:	**Recommended Formative Assessment Strategies:**
Students develop skills in this area through observation and practice. They should be encouraged to develop independence and confidence as technology users. • Introduce students to the computer. Ask if they have ever used one before. Allow them to describe some of the things they and other people do with computers. (see IT Components and Their Use) Tell them that there are things we do to take care the equipment. Review rules and care: avoid dust, dirt; use clean hands; use careful actions, etc. • Tell students about proper use: not sitting too close, avoid having earphones too loud, etc. • Help students learn the names of computer components by pointing to main parts of system and reciting its name and use. Allow students to play computer bingo where they mark pictures as you call out their names or descriptions. • Have students draw a picture of a computer they have invented. Ask students to identify what their computer can do. Guide students in a discussion of the characteristics and limitations of computers: not alive, a machine, follows instructions, etc. • Explain the relationship between software and the computer. Demonstrate proper techniques when handling software: diskettes, CD-ROMs. • Help students to log on and log off. Encourage students to help each other. • Help students develop their keyboard and mouse techniques by exploring software that requires them to click and drag. When word processing help them to locate letters and number keys and to space words. • Demonstrate opening and saving documents. • Demonstrate launching programmes with icons. Help students to successfully interact with software by helping them to focus on the screen. Help them to interpret the environment. Draw attention to similarities in real environments and real objects as well as how things behave. Show how the cursor changes as you roll over "hot spots" on the screen and how hot spots can make things happen. • Help students to navigate software environments and understand cues such as arrows, scroll bars, clock/hourglass, etc. • Give students opportunities to assist with the operation of a variety of other classroom technologies eg: VCR, disc player, OHP, etc.	**Assessments that are part of regular teaching and learning in classrooms. Teachers and students use this data to promote student learning and conceptual understanding.** • Students can identify computer components upon request and use the correct names when interacting with peers. • Students participate in discussion and can describe some uses of computers. • Observe how well students obey rules and observe the proper care of equipment. • Have students launch software using an icon on the desktop. Observe the students' ability to use the mouse to point, click and drag with a variety of software types. • Have students launch software using an icon on the desktop. Observe the students' ability to use the keyboard to key letters and numbers.

Module Title: IT Components and Their Use	**Sequence Reference:** P1 IT-A

Summative Assessment:

Assessments given at the end of a module where the data is used to generate grades.

- **Performance:**
  - When orally given the name of a computer component, students can correctly indicate that component by pointing
  - Gauge the students' understanding of the operation of a computer system: At the computer ask students to describe how to log on to the computer; open a particular document; type a few letters or draw a picture; close the document.
  - Ask students to demonstrate their favourite electronic book. Observe how well the student uses keyboard and mouse techniques.

Special Resources:

(materials, equipment & community involvement)

- Computer system
- MS Works
- Amazing Writing Machine
- Kid Pix Deluxe Studio
- Theme Weavers: Animals
- Theme Weavers: Nature
- Sammy's Science House
- Trudy's Time & Place
- Bailey's Book House
- teacher-made bingo cards, equipment labels
- paper, crayons, modelling clay, etc

References - Teacher:

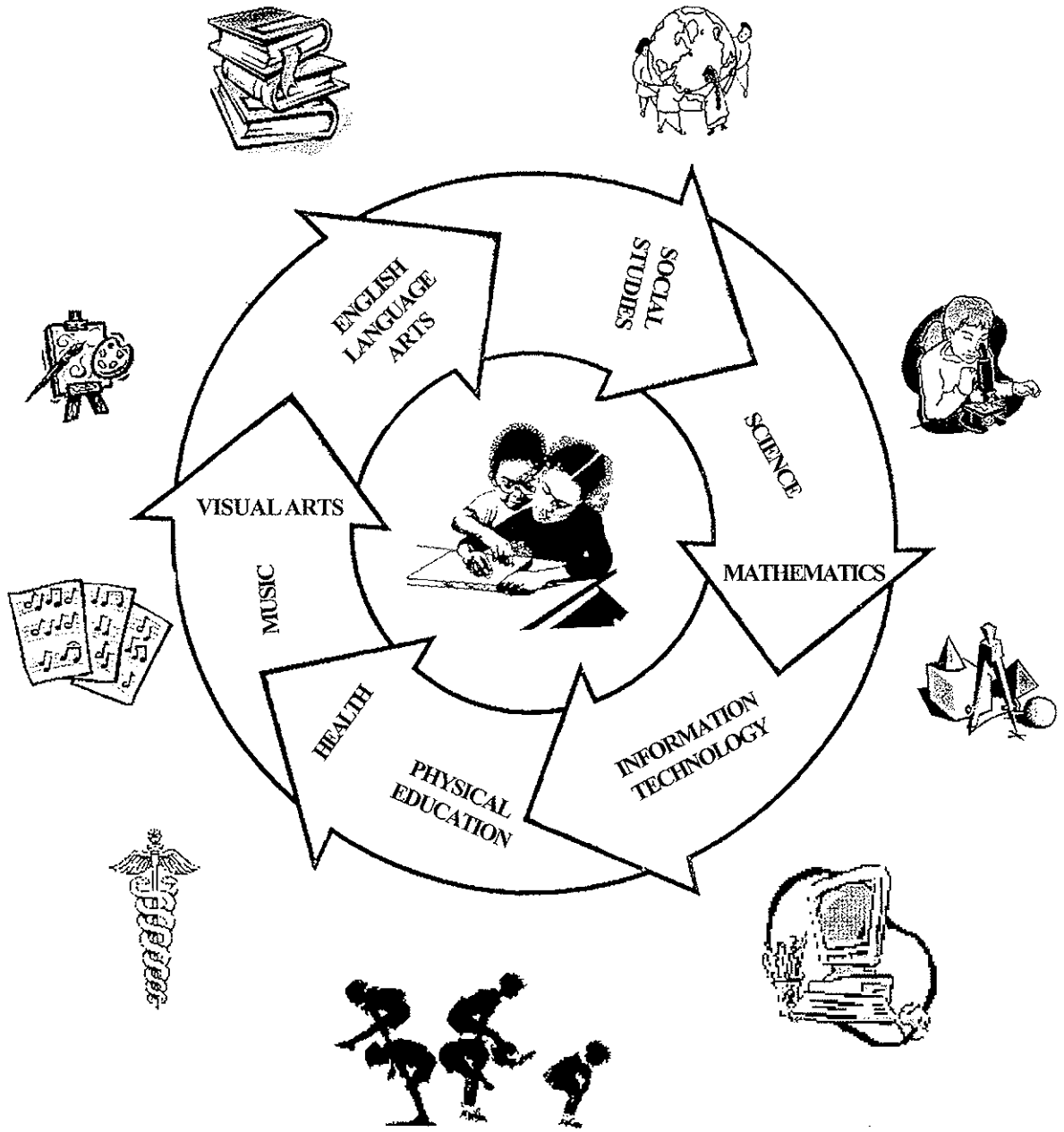
- Willis, Stephens & Matthew, Using Technology In The Classroom. Allyn & Bacon, 1996
- Shelly, Cashman, Counter, Teachers Discovering Computers: A Link to the Future. 1999
- Giesert & Futnell, Teachers, Computers & Curriculum: Using Computers in the Classroom. 1999

References - Student:

- Basic Computer Skills level K

Glossary:

- refer to text


ENGLISH LANGUAGE ARTS
SOCIAL STUDIES
SCIENCE
MATHEMATICS
INFORMATION TECHNOLOGY
PHYSICAL EDUCATION
HEALTH
MUSIC
VISUAL ARTS

Module B