

TECHNOLOGY CURRI CULUM



DI OCESE OF ARLI NGTON

2000

Revi sed June 2005

COMPUTER CURRICULUM

GRADE LEVEL

Objectives	K	1	2	3	4	5	6	7	8
Computer Literacy									
Growth and Development	B	B	B	I	I	I	A	A	A
Software	B	B	B	I	I	I	A	A	A
Hardware	B	B	B	I	I	I	A	A	A
Care	B	B	B	I	I	I	A	A	A
Social/Ethical				B	B	B	I	I	I
Writing & Desktop Publishing									
Keyboarding	B	B	B	B	I	I	I	A	A
Word Processing	B	B	B	B/I	I	I	I	A	A
Graphics	B	B	B	B/I	B	I	I	I	A
Authoring Tools & Multimedia				B	B	B	B	I	I
Web Page Design								B	B
Information Management									
Databases				B	B	B	B	I	I
Spreadsheets				B	B	B	B	I	I
Application Integration					B	B	I	I	I
Information Retrieval									
Research			B	B	B	I	I	I	I
Telecommunications	B	B	B	B	B	B	I	I	I

**KEY: B - BEGINNER
I - INTERMEDIATE
A - ADVANCED**

Revised June 2005

PHILOSOPHY

Advancements in our rapidly changing world necessitate the acquisition of technological skills to enable students to function in the 21st Century. As lifelong learners and followers of Jesus, students should strive to become citizens who are capable of making significant contributions to our global society. They must also become aware of the social and ethical impact of technology. To this end, the Diocese of Arlington endeavors to make our students not only knowledgeable, but also effective technology users.

Our goal is to present and strengthen the skills students need to access, interpret, and synthesize information which is constantly changing. Thus, technology will be used as a tool for learning and developing critical thinking skills across the content area. Having students acquire these skills will result in the development of self-directed learners who can independently and cooperatively apply technology to solve problems and make informed decisions. Following the established end goals/target areas, given the varying resources at the elementary level, the students will be well equipped with a strong foundation to enhance their learning with advanced technology resources at the high school level.

Technology should enhance and enrich as well as extend the existing curriculum. It should be used in a variety of ways within the classroom and computer lab setting. The classroom teacher, the media specialist, the technology coordinator, and the librarian should collaborate to maximize the effective use of technology in support of the Diocesan curriculum.

Due to the rapid advancements and changes in technology, the curriculum will be reviewed annually or as needed. The review process will reflect appropriate changes and or adjustments as needed.

TECHNOLOGY AND CURRICULUM INTEGRATION

Technology for technology's sake does little to enhance the academic lives of our students or our role as Catholic educators. Accordingly, technology curriculum coordinators will, to the greatest extent possible, work toward achievement of the following skills-based target areas by close collaboration with teachers. Sharing of written curriculum objectives, one-on-one meetings and teacher hands-on participation in technology instruction are examples of proven collaborative methods. In this way, student technology skill achievement is successfully integrated with content/subject-based, curriculum objectives achievement. Successful integration, whether in a lab or classroom environment:

- ◆ Leads to maximum use of technology resources
- ◆ Provides more substantive learning experiences
- ◆ Encourages teachers to creatively incorporate instructional technology tools into their curriculum over time

END GOALS/TARGET AREAS FOR GRADES K-2

Computer Literacy

T.K-2.1 Growth and Development

Students will be aware of the constant changes/advancements in technology and begin to develop a technical vocabulary.

T.K-2.2 Software

Students will follow instructions to navigate within application software.

T.K-2.3 Hardware

Students will be able to identify the parts of the computer and their functions.

T.K-2.4 Care

Students will demonstrate the proper care of computer hardware and software.

Writing and Desktop Publishing

T.K-2.5 Keyboarding and Mouse Skills

Students will be introduced to the keyboard layout and develop good mouse skills.

T.K-2.6 Word Processing

Students will produce simple single page documents.

T.K-2.7 Graphics

Students will be able to create simple graphics to enhance documents.

Information Retrieval

T.K-2.8 Research

Students will be introduced to the use of technology for research purposes.

T.K-2.9 Telecommunications

Students will be introduced to telecommunications terminology and capabilities.

END GOALS/TARGET AREAS FOR GRADES 3-5

Computer Literacy

T.3-5.1 Growth and Development

Students will be aware of the rapid advancements in technology, expand technical vocabulary and begin to understand computer theory.

T.3-5.2 Software

Students will independently access, as well as navigate within application software.

T.3-5.3 Hardware

Students will be able to identify the functions of the parts of the computer.

T.3-5.4 Care

Students will demonstrate the proper care of computer hardware and software.

T.3-5.5 Social and Ethical

Students will be introduced to the ethical, moral and legal issues surrounding the use of technology.

Writing and Desktop Publishing

T.3-5.6 Keyboarding

Students will have a basic knowledge of proper keyboarding techniques.

T.3-5.7 Word Processing

Students will have a working knowledge of basic word processing functions such as open, close, format, edit, and save.

T.3-5.8 Graphics

Students will be able to create and integrate simple graphics to enhance documents.

T.3-5.9 Authoring Tools/Multimedia

Students will be introduced to simple presentation packages used to create multimedia projects.

Information Management

T.3-5.10 Databases

Students will be introduced to the use of databases.

T.3-5.11 Spreadsheets

Students will be introduced to the working knowledge of simple spreadsheets

Information Retrieval

T.3-5.12 Research

Students will be introduced to the use of technology for research purposes.

T.3-5.13 Telecommunications

Students will be introduced to telecommunications terminology and capabilities.

END GOALS/TARGET AREAS FOR GRADES 6 THROUGH 8

Computer Literacy

T.6-8.1 Growth and Development

Students will be aware of the evolution of the computer and its inherent obsolescence and expand technical vocabulary to match advancements.

T.6-8.2 Software

Students will identify the functions of operating system software and application software.

T.6-8.3 Hardware

Students will identify the hardware components that support the basic functions of a computer: (1) input, (2) output, (3) storage, (4) processing and (5) telecommunications

T.6-8.4 Care

Students will demonstrate the proper care of hardware and software components.

T.6-8.5 Social and Ethical

Students will be prepared to use technology in an ethical, moral, and legal manner. Topics should include copyright, privacy, security, and virus protection.

Writing and Desktop Publishing

T.6-8.6 Keyboarding

Students will make use of proper keyboarding techniques to achieve a competency goal of 30 wpm, with 95% accuracy.

T.6-8.7 Word Processing

Students will have a working knowledge of more complex word processing functions. Students will integrate databases, graphics, and spreadsheets into word-processes documents.

T.6-8.8 Graphics

Students will be able to import and manipulate graphics to enhance documents.

T.6-8.9 Authoring Tools/Multimedia

Students will have a working knowledge of simple presentation packages used to create multimedia projects (i.e., Science Fair Projects).

T.6-8.10 Web Page Design

Students will develop a basic web page.

Information Management

T.6-8.11 Databases

Students will have a working knowledge of more complex database functions.

T.6-8.12 Spreadsheets

Students will have a working knowledge of spreadsheets to create, calculate, organize, and chart information (i.e., Science Fair Projects).

T.6-8.13 Application Integration

Students will integrate data base and spreadsheet information into other applications.

Information Retrieval

T.6-8.14 Research

Students will be able to utilize technology for research purposes using multimedia CD ROM and/or the Internet.

T.6-8.15 Telecommunications

Students will have a working knowledge of telecommunications terminology and capabilities.

**COMMONWEALTH
OF
VIRGINIA**

**STANDARDS OF LEARNING
COMPUTER TECHNOLOGY**

Commonwealth of Virginia
COMPUTER/TECHNOLOGY STANDARDS BY THE END OF GRADE FIVE

*(Italicized references identify concordance with End Goals/Target Areas in these
“Technology Guidelines.”)*

Computer/Technology skills are essential components of every student's education. In order to maximize opportunities for students to acquire necessary skills for academic success, the teaching of these skills should be the shared responsibility of teachers of all disciplines. Minimum skills that students should acquire by the end of Grade 5 include the following:

C/T 5.1 The student will demonstrate a basic understanding of computer theory including bits, bytes, and binary logic. *(I-A: Computer Literacy, Growth and Development for Grades K-2 and 3-5)*

C/T5.2 The student will develop basic technology skills.

- * Develop a basic technology vocabulary that includes cursor, software, memory, disk drive, hard drive, and CD- ROM. *(I-B and I-C: Computer Literacy, Software & Hardware for Grades K-2 and 3-5)*
- * Select and use technology appropriate to tasks. *(I-B and I-C: Computer Literacy, Software and Hardware for Grades K-2 and 3-5)*
- * Develop basic keyboarding skills. *(II-A: Writing and Desktop Publishing, Keyboarding for Grades K-2 and 3-5)*
- * Operate peripheral devices. *(I-C: Computer Literacy, Hardware for Grades K-2 and 3-5)*
- * Apply technologies to strategies for problem solving and critical thinking. *(I-B: Computer Literacy, Software for Grades K-2 and 3-5)*

C/T5.3 The student will process, store, retrieve, and transmit electronic information.

- * Use search strategies to retrieve electronic information using databases, CD-ROMs, videodiscs, and telecommunications. *(IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades K-2, and 3-5; III-A: Information Management, Databases for Grades 3-5)*
- * Use electronic encyclopedias, almanacs, indexes, and catalogs. *(IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades K-2, and 3-5; III-A: Information Management, Databases for Grades 3-5)*
- * Use local and wide-area networks and modem-delivered services to access information from electronic databases. *(IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades K-2, and 3-5; III-A: Information Management, Databases for Grades 3-5)*
- * Describe advantages and disadvantages of various computer processing, storage, retrieval, and transmission techniques. *(I-C, Computer Literacy, Hardware for Grades K-2, 3-5; IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades K-2, and 3-5; III-A: Information Management, Databases for Grades 3-5)*

C/T5.4 The student will communicate through application software.

- * Create a 1-2 page document using word processing skills, writing process steps, and publishing programs. (***II-B: Writing and Desktop Publishing, Word Processing for Grades K-2 and 3-5***)
- * Use simple computer graphics and integrate graphics into word-processed documents. (***II-C: Writing and Desktop Publishing, Graphics for Grades K-2 and 3-5***)
- * Create simple databases and spreadsheets to manage information and create reports. (***III-A and III-B: Information Management, Databases and Spreadsheets for Grades 3-5***)
- * Use local and worldwide network communication systems. (***IV-B: Information Retrieval, Research and Telecommunications for Grades K-2, and 3-5***)

Commonwealth of Virginia
COMPUTER/TECHNOLOGY STANDARDS BY THE END OF GRADE EIGHT

*(Italicized references identify concordance with End Goals/Target Areas in these
“Technology Guidelines.”)*

Computer/Technology skills are essential components of every student's education. In order to maximize opportunities for students to acquire necessary skills for academic success, the teaching of these skills should be the shared responsibility of teachers of all disciplines. Minimum skills that students should acquire by the end of Grade 8 include the following:

C/T8.1 The student will communicate through application software.

- * Compose and edit a multi-page document at the keyboard, using word processing skills and the writing process steps. ***(II-B: Writing & Desktop Publishing, Word Processing for Grades 3-5, 6-8)***
- * Communicate with spreadsheets by entering data and setting up formulas, analyzing data, and creating graphs or charts to visually represent data. ***(III-B: Information Management, Spreadsheets for Grades 3-5, 6-8)***
- * Communicate with databases by defining fields and entering data, sorting, and producing reports in various forms. ***(III-A: Information Management, Databases for Grades 3-5, 6-8)***
- * Use advanced publishing software, graphics programs, and scanners to produce page layouts. ***(II-C: Writing and Desktop Publishing, Graphics for Grades 6-8)***
- * Integrate databases, graphics, and spreadsheets into word-processed documents. ***(II-B: Writing and Desktop Publishing, Word Processing and III-C: Information Management, Application Integration for Grades 6-8)***

C/T8.2 The student will communicate through networks and telecommunication.

- * Use local and worldwide network communication systems. ***(IV-B: Information Retrieval, Telecommunications for Grades 3-5, 6-8)***
- * Develop hypermedia "home page" documents that can be accessed by worldwide networks. ***(II-D: Writing and Desktop Publishing, Authoring Tools/Multimedia for Grades 3-5, 6-8)***

C/T8.3 The student will have a basic understanding of computer processing, storing, retrieval, and transmission technologies and a practical appreciation of the relevant advantages and disadvantages of various processing, storage, retrieval, and transmission technologies. ***(IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades 3-5 & 6-8; III-A: Information Management, Databases for Grades 3-5, 6-8)***

C/T8.4 The student will process, store, retrieve, and transmit electronic information.

- * Use search strategies to retrieve electronic information. (*IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades 3-5, 6-8; III-A: Information Management, Databases for Grades 3-5, 6-8*)
- * Use electronic encyclopedias, almanacs, indexes, and catalogs to retrieve and select relevant information. (*IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades 3-5, 6-8; III-A: Information Management, Databases for Grades 3-5, 6-8*)
- * Use laser discs with a computer in an interactive mode. (*I-B: Computer Literacy, Hardware for Grades 3-5, 6-8*)
- * Use local and wide-area networks and modem-delivered services to access and retrieve information from electronic databases. (*IV-A and IV-B: Information Retrieval, Research and Telecommunications for Grades 3-5, 6-8; III-A: Information Management, Databases for Grades 3-5, 6-8*)
- * Use databases to perform research. (*III-A: Information Management, Databases for Grades 3-5, 6-8*)

TECHNOLOGY CURRICULUM

TEACHER RESOURCES



Grade K-2

The student will begin to understand computer processing, storing, retrieval, and transmission technologies.

COMPUTER LITERACY

Growth and Development

Students will develop a basic technical vocabulary.

Students will be aware of the constant changes/advancements in technology.

Students will identify examples of computer technology in their home or on a trip. (Lesson plan example)

Software

Students will start applications and retrieve files.

Students will have a basic understanding of application usage including tools, dialogue boxes, menus and navigation.

Hardware

Students will identify the parts of the computer and their functions, such as:

<u>Input</u>	<u>Output</u>	<u>Storage</u>	<u>Processing</u>
Mouse	Monitor	Floppy Disks	CPU
Keyboard	Printer	Hard Drives	Mother board
Scanner	Speaker	CD-ROM	Daughter board
	Headphones		

Care

Students will demonstrate the proper care of computer hardware and software.

- do's and don'ts
- teacher modeling appropriate care

Social and Ethical

Students will learn to share resources.

WRITING AND DESKTOP PUBLISHING

Keyboarding

Students will identify keyboard and mouse as input devices.

Students will develop good mouse skills and coordinate with keyboard.

Students will be introduced to keyboard layout.

- use appropriate keyboard charts and teacher generated worksheets

Word Processing

Students will compose simple documents.

- create short sentences, list of words, poems using proper capitalization and punctuation
- use correct space between words and sentences
- have knowledge of size, font, and style
- utilize graphics to illustrate and enhance story development

Graphics

Students will create graphics.

- develop intuitive skills through the use of a graphics program
- identify and use each tool in the tool box
- add text to describe the graphic

Authoring Tools and Multimedia (Not required at this level)

INFORMATION MANAGEMENT (Not required at this level)

Databases (Not required at this level)

Spreadsheets (Not required at this level)

INFORMATION RETRIEVAL

Research

Students will learn about the use of technology for research purposes.

- know that traditional research sources need to be verified

Telecommunications

Students will be introduced to telecommunications terminology and capabilities.

- spell and define simple telecommunication terms
- match terms and pictures

Grade 3-5

The student will have a basic understanding of computer processing, storing, retrieval, and transmission technologies and a basic appreciation of the relevant advantages and disadvantages of various processing, storage, retrieval, and transmission technologies.

COMPUTER LITERACY

Growth and Development

Students will expand their technical vocabulary.

-cursor, software, memory, disk drive, hard drive, CD-ROM

Students will demonstrate a basic understanding of computer theory, including bits, bytes and binary logic.

Students will describe rapid advancements in technology.

Software

Students will have mastery of application usage including tools, menus, dialog boxes and navigation.

Students will have an understanding of file management.

Students will choose appropriate application (word processing, database, spreadsheets, graphics and presentation) to perform an assigned task.

Hardware

Students will understand the four functions of computing:

- Input
- Output
- Storage
- Processing

Care

Students will demonstrate the proper care of hardware and software components.

Social and Ethical

Students will develop understanding of ethical, moral, and legal issues surrounding the use of technology.

Students will learn appropriate Internet behavior and computer communication etiquette.

WRITING AND DESKTOP PUBLISHING

Keyboarding

Students will identify and use specific keys.

Navigation keys, alpha keys, special function keys, shift, caps lock, space bar, enter, backspace, delete, arrow, period, question mark

Students will complete a comprehensive unit in keyboarding stressing keyboarding techniques (proper home row position and posture), accuracy and speed, in that order.

Word Processing

Students will utilize basic word processing functions such as open, close, format, edit, and save.

Students will utilize word processing software.

- create a 1-2 page document using word processing skills and writing process steps
- use simple computer graphics and integrate graphics into word processing documents
- use local and worldwide network communication systems

Graphics

Students will produce more complex graphics.

- create graphics with features/effects such as 3-D, shadows, texture
- select and use pre-prepared graphics such as clipart and photos
- manipulate original and pre-prepared graphics using more sophisticated graphic tools such as resize, rotate, crop, mirror image, etc.

Authoring Tools and Multimedia

Students will be introduced to presentation packages to create simple multimedia projects based on established criteria (rubric), which might include the following elements:

- theme
- content
- length
- originality

INFORMATION MANAGEMENT

Databases

Students will be introduced to databases and how they are used in every day life.

Examples: phone book, personal address book, software programs, such as Encarta, encyclopedia, etc.

Spreadsheets

Students will be introduced to simple spreadsheets and their uses, such as plotting temperatures and sports scores, charting polls, etc.

- exposure could include:
 - navigating within the spreadsheet
 - setting up headings
 - understanding basic formulas
 - creating and modifying charts

Application Integration

Students will begin to integrate databases, graphics, and spreadsheets into word-processing documents, such as:

- incorporating simple charts within essays
- incorporating simple charts within slide shows

INFORMATION RETRIEVAL

Research

Students will utilize technology for research purposes using multimedia CD-ROM and/or Internet.

- begin to use electronic encyclopedias, almanacs, indexes, and catalogs
- begin to use effective search strategies to retrieve electronic information using databases, CD-ROMs, videodiscs, and telecommunications
- describe advantages and disadvantages of various computer processing, storage, retrieval, and transmission techniques
- use traditional research sources to verify and supplement information

Telecommunications

Students will be introduced to telecommunications terminology and capabilities.

- use local, wide-area and world wide network communication systems to access information

Students will process, store, retrieve, and transmit electronic information.

Grade 6-8

The student will have an understanding of computer processing, storing, retrieval, and transmission technologies and a practical appreciation of the relevant advantages and disadvantages of various processing, storage, retrieval, and transmission technologies.

COMPUTER LITERACY

Growth and Development

Students will increase their technical vocabulary.

Students will begin to understand the connections and time chronology between significant persons, events and outside influences in the development of electronic computers.

Students will begin to understand the challenges and limitations that the early computing machines posed.

Software

Students will have a basic understanding of the operating system and its relationship to application software.

Students will have mastery of file management.

- creating folders
- organizing files within folders, etc

Students will choose and integrate appropriate multiple applications (word processing, database, spreadsheets, graphics and presentation) to perform an assigned task.

Hardware

Students will match hardware components to their functions:

- Input
- Output
- Storage
- Processing

Care

Students will demonstrate the proper care of hardware and software components.

Social and Ethical

Students will become aware of ethical, moral and legal issues related to technology. These include Copyright, patent, design, privacy, security, and virus protection.

Students will learn appropriate Internet behavior and computer communication etiquette.

WRITING AND DESKTOP PUBLISHING

Keyboarding

Students will make use of proper keyboarding techniques to increase keyboarding speed to 30 wpm with 90 % accuracy.

Word Processing

Students will have a working knowledge of more complex word processing functions.

- compose and edit a multi-page document at the keyboard, using word processing skills and the writing process steps.
- employ textboxes and columns
- import graphics from other programs
- reposition and resize graphics

Suggested activity:

Using computer simulation activity, involve student in multi-application assignment: Running business, planning an event, running for office

Graphics

Students will be able to import graphics to enhance documents and integrate within applications.

- identify different types of graphics
- identify advantages and disadvantages of each type
- identify and use input graphic devices such as scanner and digital camera, etc.
- select and use other sources of pre-prepared graphics such as local drives, network and the Internet

Authoring Tools and Multimedia

Students will use appropriate applications to create multimedia projects.

- explore uses of simple text editing software (i.e. note pad)
- use advanced publishing software, (if available) graphics programs, and scanner to produce page layouts
- develop hypermedia “home page” documents that can be accessed by local or worldwide networks
- develop personal web page based, which could include technical components (tags, tables, links, graphics and text) as well as creativity

INFORMATION MANAGEMENT

Databases

Students will have a working knowledge of more complex database functions.

- create databases by
 - defining fields
 - formatting forms
 - entering data
 - sorting data
 - querying data
 - producing various reports

Spreadsheets

Students will master creating, calculating, organizing, and charting information on spreadsheets.

Students will analyze data, create and modify graphs and charts to visually represent data.

- master terminology
- set up headings
- create and use more complex formulas
- utilize duplicating and copying
- create and modify more complex charts
- use copy, cut and paste within spreadsheets
- use worksheet formatting for viewing and printing
- begin to analyze and draw conclusions from the data

Application Integration

Students will integrate databases, graphics, and spreadsheets into word-processing documents and presentations.

INFORMATION RETRIEVAL

Research

Students will utilize technology for research purposes using multimedia CD ROM and/or Internet.

- use databases to perform research
- demonstrate effective use of electronic encyclopedias, almanacs, indexes, and catalogs to retrieve and select relevant information.

Students will learn search strategies to retrieve electronic information.

- following established criteria (rubric), identify types of search engines
- know purpose of search engines
- use a variety of mass storage media (CD-ROM, DVD, Laser Disk, etc.) with a computer in an interactive mode

Students will use traditional research sources to verify and supplement information.

Telecommunications

Students will utilize telecommunications and capabilities.

- properly utilize telecommunications terminology
- be introduced to basic networking concepts
- use local, wide-area and world wide network communication systems to access and retrieve information.
- use local and worldwide network communication systems
- communicate through networks and telecommunication