

**NORTH HALEDON SCHOOL DISTRICT  
TECHNOLOGY LITERACY  
CURRICULUM GUIDE**

**K - 8**

**2009**

**Office of Curriculum and Instruction**

**NORTH HALEDON SCHOOL DISTRICT**

**515 High Mountain Road'**

**North Haledon, NJ 07508**

**Passaic County, New Jersey**

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## TECHNOLOGY CURRICULUM COMMITTEE

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### Preface

The “Net Generation” has indeed arrived in our schools and they have made their presence known (Tapscott, 1998). They have also been described as “digital natives” since they are the native speakers of technology - possessing a fluency in the language of computers, video games, and the Internet (Prensky, 2006). In response to their unique needs, educators have used technology to develop new approaches to (a) the delivery of instruction, (b) the creation of processing activities for students to internalize new information and skills, and (c) the construction of assessments that enable students to demonstrate what they have learned. Furthermore, technology provides multiple approaches to increase student engagement in learning. The educational literature suggests that technology will continue to make its mark on the instructional process (Moore, Lockee, & Moore, 2001).

Investigations conducted over the past decade have revealed the relationship between technology assisted instruction and student achievement (Christmann & Badgett, 1999; D’Amico, 2001; Dede, 1998; Jossey-Bass, 2000; Wenglinsky, 2006). The most striking results occur when technology integration is coupled with innovations in pedagogy and curriculum design. In particular, students profit when teachers incorporate computers in a manner that promotes higher-order thinking in the content areas. This guide is designed to support that vital curriculum integration.

For many years technology literacy has been recognized as an essential workplace competency. Problem solving and the gathering and organizing of information are essential skills that are enhanced by technology education and are essential for students in their post-secondary education and/or the world of work (Thornburg, 2002). The New Jersey Department of Education has recently further emphasized the importance of technology education by creating separate standards for technology literacy within the New Jersey Core Curriculum Content Standards (New Jersey Department of Education, 2004). These new standards focus on both computer and information literacy and technology education. The intent of this guide is to provide K-8 scope and sequence of technology literacy objectives, articulation among the member schools of the North Haledon School District, and the alignment of technology instruction to these revised New Jersey Standards.

The *North Haledon School District Technology Literacy Curriculum Guide* represents the efforts of a committee composed of faculty representatives. This committee worked for over a year to conduct research, discuss national trends in technology education, study the standards, share ideas, and write the guide. They devoted countless hours to the task and their efforts and expertise are most appreciated.

### References

- Christmann, E., & Badgett, J. (1999). A comparative analysis of the effects of computer-assisted instruction on student achievement in science in differing demographic areas. *Journal of Computers in Mathematics and Science Training*, 18 (2), 135-143.
- D'Amico, J.J. (2001). Technology in America's schools: An overview of status and issues. *ERS Spectrum Journal of School Research Information*, 19 (1), 4-8.
- Dede, C. (1998). The scaling-up process for technology-based educational innovations. In C. Dede, (Ed.) *Learning with technology*. Alexandria, VA: ASCD Publications.
- Jossey-Bass, Inc. (2000). *The Jossey-Bass reader on technology and learning*. San Francisco, CA: Jossey-Bass, Inc.
- Moore, D. M., Lockee, B., & Moore, D. R. (2001). *Technology and learning: Putting the research to work*. Bloomington, IN: Phi Delta Kappa.
- Prensky, M. (2006). Listen to the natives. *Educational Leadership*, 63 (4), 8-13.
- New Jersey Department of Education (2004). *New Jersey core curriculum content standards*. Trenton, NJ: author.
- Tapscott, D. (1998). *Growing up digital: The rise of the net generation*. New York: McGraw Hill.
- Thornburg, D. (2002). *The new basics: Education and the future of work in the telematic age*. Alexandria, VA: ASCD Publications.
- Wenglinsky, H. (2006). Technology and achievement: The bottom line. *Educational Leadership*, 63 (4), 29-32.

## **OBJECTIVES TO BE ADDRESSED THROUGHOUT THE TECHNOLOGY IN EDUCATION CURRICULUM**

**The use of technology is integrated in all subject areas. Selected software and hardware should relate appropriately to the curriculum and to the developmental level of the students.**

### **K - 8 General Objectives**

#### **Students will demonstrate:**

1. Respect for ethical considerations, as delineated in each district's acceptable use policy.
2. Proper care and safe use of hardware and software.
3. Decision making and problem solving skills, individually and collaboratively.
4. Effective technological skills across subject areas.
5. Communication skills in a global environment.
6. Skills necessary to access, retrieve, analyze, evaluate, and apply information.
7. Awareness of the relationship between technology and career choices.
8. Awareness of technology as an agent of change and its impact on society.
9. An ability to use technology in daily learning activities.
10. Use appropriate technology vocabulary.
11. Use common features of an operating system (e.g. creating and organizing files and folders).
12. Demonstrate an understanding of how changes in technology impact the workplace and society.
13. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.
14. Use computer applications to modify information independently and/or collaboratively to solve problems.
15. Identify basic hardware problems and demonstrate the ability to solve common problems.
16. Determine when technology tools are appropriate to solve a problem and make a decision.

**GRADES K – 4**  
**TECHNOLOGY LITERACY CURRICULUM**

**WORD PROCESSING**

**Essential Questions:**

1. How can inputting techniques be improved by correct use of the keyboard and other devices?
2. How can a computer and related technologies be used to facilitate the writing process?
3. How can desktop publishing be used to create, enhance, format, and publish a document?

**K - 2 Objectives**

**By the end of Grade 2, students will be able to:**

1. Correctly use left and right hand keystrokes. 8.1.(4)A.3
2. Recognize and locate character keys, return/enter, space bar, arrows, caps lock, delete, escape, and shift key. 8.1.(4)A.3
3. Demonstrate the basic mouse skills of pointing, clicking, dragging, and using pull-down menus. 8.1.(4)A.3
4. Input: enter text, use tab to indent, demonstrate correct use of return. 8.1.(4)A.3
5. Format: use different fonts, sizes, styles, and alignments. 8.1.(4)A.4
6. Save and retrieve. 8.1.(4)A.7
7. Print: set print options. 8.1.(4)A.2

**3-4 Objectives**

**Building upon knowledge and skills gained in the preceding grades, by the end of Grade 4, students will be able to:**

1. Strike keys with correct fingers using the home row position. 8.1.(4)A.3
2. Utilize shortcut keystrokes. 8.1.(4)A.3
3. Input: compose, revise, and insert special characters. 8.1.(4)A.3
4. Edit: cut, copy, paste. 8.1.(4)A.4
5. Format: Margins, tabs. 8.1.(4)A.4
6. Incorporate graphics into a word processing document. 8.1.(4)A.4
7. Publish a document that includes a title page. 8.1.(4)A.4
8. Create signs, posters, and covers. 8.1.(4)A.4
9. Spell check. 8.1.(4)A.4
10. Print: change orientation and scale. 8.1.(4)A.2,4
11. Utilize information from multiple files and applications that are open simultaneously. 8.1.(4)A.2,7
12. Create newsletters, signs and brochures. 8.1.(4)A.4
13. Import text and graphics. 8.1.(4)A.4
14. Enhance documents with borders, frames, shadow boxes, wrapped text, and graphics. 8.1.(4)A.4

## VISUAL LEARNING

### **Essential Questions:**

1. How can a computer and related technologies be used as a tool to create digital graphic compositions as artwork or enhancements to presentations and documents?
2. How can information be effectively presented in multi-media format?

### **K - 2 Objectives**

#### **By the end of Grade 2, students will be able to:**

1. Create a visual composition using basic tools such as brush, bucket, spray can, eraser, shape, line, and text tools. 8.1.(4)A.3
2. Import a graphic. 8.1.(4)A.3
3. Combine text and graphics. 8.1.(4)A.3,4,6
4. Author a basic slide show using transition effects. 8.1.(4)A.6
5. Present a multimedia slide show using transitions, sound, text and graphic effects. 8.1.(4)A.6

### **3 - 4 Objective**

#### **Building upon knowledge and skills gained in the preceding grades, by the end of Grade 4, students will be able to:**

1. Create graphic organizers (flow chart, timeline, Venn diagram). 8.1.(4)A.8
2. Resize, scale, rotate, duplicate, group, arrange, reshape, and manipulate objects. 8.1.(4)A.3

## SPREADSHEETS AND DATABASES

### **Essential Question:**

How can a spreadsheet program be used to collect, manipulate, calculate, and present information?

### **3-4 Objectives**

#### **Building upon knowledge and skills gained in the preceding grades, by the end of Grade 4, students will be able to:**

1. Produce or interpret a simple graph or chart by entering and editing data on a prepared spreadsheet template. 8.1.(4)A.5 6

## **INFORMATION ACCESS AND RESEARCH**

### **Essential Questions:**

1. How can a computer be used to access, retrieve, synthesize, and evaluate information?
2. How are computers used to communicate, transfer, and access information electronically in a global environment?

### **K-2 Objectives**

#### **By the end of Grade 2, the students will be able to:**

1. Access a website. 8.1.(4)B.6
2. Navigate within a browser. 8.1.(4)B.6
3. Participate in on-line activities. 8.1.(4)B.2,3

### **3 - 4 Objectives**

#### **Building upon knowledge and skills gained in the preceding grades, by the end of Grade 4, students will be able to:**

1. Follow a guided search. 8.1.(4)B.5,6
2. Utilize bookmarks. 8.1.(4)B.6
3. Use electronic resources as a research tool. 8.1.(4)B.5-8
4. Initiate a search. 8.1.(4)B.5,6
5. Cite electronic resources. 8.1.(4)B.2,4
6. Capture images and texts. 8.1.(4)B.6
7. Retrieve, synthesize, and summarize information. 8.1.(4)B.5-8
8. Copy and paste text and graphics from the Internet into a word processing document. 8.1.(4)A.3; (4)B.2,4

## **SOCIAL ASPECTS OF TECHNOLOGY**

### **Essential Question:**

1. What are the ethical and legal aspects of technology use?

### **K-2 Objectives**

#### **By the end of Grade 2, the students will be able to:**

1. Discuss the common uses of computer applications. 8.1.(4)B.1
2. Recognize and practice responsible behaviors when using technology and understand the consequences of inappropriate behavior including:
  - ~ Equipment usage 8.1.(4)B.2
  - ~ Personal security and safety issues 8.1.(4)B.2,3

### **3-4 Objectives**

**Building upon knowledge and skills gained in the preceding grades, by the end of Grade 4, students will be able to:**

1. Discuss and identify the advantages and disadvantages of computer applications.  
8.1.(4)B.1
2. Recognize and practice responsible social and ethical behaviors when using technology and understand the consequences of inappropriate behavior including:
  - ~ Internet access 8.1.(4)B.2
  - ~ Copyrighted materials 8.1.(4)B.2
  - ~ On-line library resources 8.1.(4)B.2
  - ~ Personal security and safety issue 8.1.(4)B.4
3. Recognize the ethical and legal implications of plagiarism of copyrighted materials.  
8.1.(4)B

**GRADES 5 – 8  
TECHNOLOGY LITERACY CURRICULUM**

**WORD PROCESSING**

**Keyboarding, Input, Publishing**

**Essential Question:**

How can a computer and related technologies be used to facilitate the writing and publishing process?

**5 - 8 Objectives**

**Building upon knowledge and skills gained in the preceding grades, by the end of Grade 8, students will be able to:**

1. Input: compose, revise, and insert special characters 8.1.(8)A.5
2. Edit: cut, copy, paste, use the thesaurus, and find/replace. 8.1.(8)A.5
3. Format: create/use page breaks, columns, paragraph styles, margins, tabs, and text rulers. 8.1.(8)A.5
4. Print: change orientation and scale. 8.1.(8)A.5
5. Utilize information from multiple files and applications that are open simultaneously and/or merging documents. 8.1.(8)A.5
6. Format a research document. 8.1.(8)A.5
7. Enhance documents using advanced formatting tools.

**Essential Question:**

How can inputting techniques be improved by the correct use of the keyboard and other devices?

**5 - 8 Objectives**

**Building upon knowledge and skills gained in the preceding grades, by the end of Grade 8, students will be able to:**

1. Strike keys with correct fingers using the home row position. 8.1.(8)A.3,4
2. Utilize shortcut keystrokes 8.1.(8)A.12

**VISUAL LEARNING**

**Multimedia Presentations, Graphics, Graphic Organizers**

**Essential Questions:**

1. How can a computer and related technologies be used as a tool to create digital graphic compositions as artwork or enhancements to presentations and documents?
2. How can information be effectively presented in multimedia format?
3. In what way can a computer and appropriate applications be used to organize information or project planning?

## 5 - 8 Objective

**Building upon knowledge and skills gained in the preceding grades, by the end of Grade 8, students will be able to :**

1. Import/export and edit graphics from various digital sources. 8.1.(8)A.5
2. Resize, scale, rotate, duplicate, group, arrange, reshape, and manipulate objects. 8.1.(8)A.8
3. Author a presentation using hypermedia that integrates text, sound, static and animated graphics 8.1.(8) A.8
4. Create hyperlinks to documents, web pages, or other media. 8.1.(8) A.8
5. Demonstrate and explain how the design process is not linear. 8.2.(8).B.1
6. Chose appropriate computer applications for organizing information. 8.1.(8)A.11
7. Use appropriate graphic organizing software to create, construct, or design a document. 8.1.(8)A.11; 8.2.(8)B.1

## SPREADSHEETS AND DATABASES

### Essential Question:

1. How can a spreadsheet program be used to collect, manipulate, calculate, and present information?
2. How can a database be used to search, organize, present data, solve problems, and think analytically?

## 5 - 8 Objectives

### Students will be able to:

1. Enter and edit text and values. 8.1.(8)A.7
2. Create a chart from a spreadsheet. 8.1.(8)A.7
3. Use mathematical formulas in a spreadsheet format. 8.1.(8)A.7
4. Create and modify a spreadsheet by entering, formatting, and manipulating cells. 8.1.(8)A.7
5. Create a database. 8.1.(8)A.7,9
6. Sort, search and arrange data. 8.1.(8)A.7,9
7. Use data to produce a report 8.1.(8)A.7,9

## INFORMATION ACCESS & RESEARCH

### Essential Question:

How can a computer be used to access, retrieve, synthesize, and evaluate information?

## **5 - 8 Objectives**

**Building upon knowledge and skills gained in the preceding grades, by the end of Grade 8, students will be able to:**

1. Initiate a search. 8.1.(8)A.10; (8)B.6
2. Use advanced search strategies to identify key words and narrow or broaden searches and appropriate search techniques. 8.1.(8)B.6
3. Retrieve, synthesize, and summarize information. 8.1.(8)B.6
4. Evaluate information to determine relevancy and accuracy. 8.1.(8)B.7
5. Cite electronic resources. 8.1.(8)B.2
6. Communicate through networks and telecommunications. 8.1.(8)B.6

### **SOCIAL ASPECTS OF TECHNOLOGY**

#### **Essential Question:**

How can a student demonstrate ethical uses of technology?

## **5 - 8 Objectives**

**Building upon knowledge and skills gained in the preceding grades, by the end of Grade 8, students will be able to:**

1. Demonstrate an understanding of how changes in technology impact the workplace and society.
2. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.
3. Describe and practice safe Internet usage
4. Describe and practice “etiquette” when using the Internet and electronic mail
5. Exhibit legal and ethical behaviors when using information and technology.
6. Explain reasons why human designed systems, products, and environments need to be monitored, maintained, and improved to ensure safety, quality, cost efficiency, and sustainability.

## **IMPLEMENTATION RECOMMENDATIONS**

The following elements are important to the full implementation of the district educational technology plans:

1. The commitment of the Boards of Education, superintendents, principals, professional staff, and the community to endorse and fund the technology plan is necessary to the implementation plan.
2. A sufficient percentage of the school budget to implement the technology plan needs to be allocated on an annual basis. Monies for hardware/software (including up-grades), facilities, wiring, access fees, maintenance, and staff development (as per the New Jersey Department of Education Technology Plan) should be provided.
3. The up-grading and maintenance of networking and electronics on both a local and regional level should continue.
4. Continuous assessment of technology needs is an integral part of each content area.
5. A flexible scheduling framework is needed to support the infusion of technology and the role of the Instructional Technology Coordinator.
6. Instructional Technology Coordinators/Technology Curriculum Committee need to meet regularly to share information, strategies and practices, plan staff development activities, identify technical guidelines and specifications, and facilitate cost effective purchasing.
7. Districts should continue to support New Jersey State technology entitlement legislation.

## Electronic Resources

### WORD PROCESSING

Keyboarding/Inputting, Publishing

Keyboarding Skills

<http://www.moneyinstructor.com/keyboarding.asp>

Desktop Publishing

<http://desktoppublishingpro.com/desktoppublishinglessons/>

### VISUAL LEARNING

Graphics, Graphic Organizers, Multimedia Presentations

Graphics

<http://www.nvnet.org/nvhs/edresource/hubpages/Clipart.html>

Graphic Organizer

<http://www.graphic.org/index.html>

Multimedia Presentations

<http://www.2learn.ca/TeacherTools/multimedia/mmediahowto.html>

### SPREADSHEET/DATABASE

Spreadsheet

<http://www.quasar.ualberta.ca/edit202/tutorial/spreadsheet/spreadsheet.htm>

Database

<http://www.extropia.com/tutorials/sql/toc.html>

### INFORMATION ACCESS AND RESEARCH

Information Access

<http://www.sc.edu/beaufort/library/pages/bones/bones.shtml>

### SOCIAL ASPECTS

Cyber Ethics

<http://www.cybercrime.gov/rules/kidinternet.htm>

### LANGUAGE ARTS

[www.scholastic.com](http://www.scholastic.com)

<http://www.enchantedlearning.com/Home.html>

<http://www.starfall.com/>

[http://www.literacycenter.net/lessonview\\_en.htm](http://www.literacycenter.net/lessonview_en.htm)

<http://www.lil-fingers.com/>

<http://www.puzzlemaker.com/>

[www.kidsdomain.com](http://www.kidsdomain.com)

[www.eduplace.com](http://www.eduplace.com)

Adobe Digital Kids Club: Lessons and activities:

[\*\*http://www.adobe.com/education/digkids/lessons/main.html\*\*](http://www.adobe.com/education/digkids/lessons/main.html)

Kidspiration Activities:

[\*\*http://www.inspiration.com/resources/index.cfm\*\*](http://www.inspiration.com/resources/index.cfm)

## **SCIENCE**

<http://www.sciencenewsforkids.com/>

<http://www.ipl.org/div/kidspace/>

## **SOCIAL STUDIES**

<http://www.weeklyreader.com/>

<http://www.primarygames.com/>

<http://www.sheppardsoftware.com/>

[http://www.state.nj.us/hangout\\_nj/](http://www.state.nj.us/hangout_nj/)

<http://www.whitehouse.gov/kids/>

## **MATH**

### **National Library of Virtual Manipulatives:**

<http://nlvm.usu.edu/en/nav/vlibrary.html>

[www.aaamath.com](http://www.aaamath.com)

[www.aplusmath.com](http://www.aplusmath.com)

McHall Text Books Online:

<http://www.glencoe.com/>

## **REFERENCES**

<http://www.factmonster.com>

<http://www.worldalmanacforkids.com/>

<http://www.educationworld.com/>

<http://www.answers.com>

Kathy Schrock's Guide for Educators:

<http://school.discovery.com/schrockguide/>

## **Keyboarding**

*This site is recommended as a comprehensive resource for teaching keyboarding.*

<http://www.usoe.k12.ut.us/ate/keyboarding/key.htm>

## **Multimedia Presentations, Graphics, Graphic Organizers**

### **PowerPoint Resources**

<http://ttechno.com/links/powerpoint.html>

### **For project ideas in Inspiration/Kidspiration**

<http://www.uwstout.edu/soe/profdev/conceptmap/50uses.html>

Integrating Inspiration/Kidspiration in the classroom

<http://www.wacona.com/kidspiration/kidspiration.html>

Inspiration Tutorials

<http://www.inspiration.com/tutorials/index.cfm?> (Click on "Quick Start Tutorial")

<http://projects.edtech.sandi.net/staffdev/webqmm/week8.html>

Templates for Inspiration/Kidspiration

<http://cbss.uoregon.edu/clearing/index.html#>

Rubrics for Graphic Organizers

<http://dmc.umn.edu/activities/mindmap/#522>

### **Spreadsheet/Database**

*Although this site has a membership section, there are significant free resources available. Type a search term in the box. There are topics other than spreadsheets and database as well.*

<http://www.teach-nology.com>

Links to spreadsheet & database resources

<http://ttechno.com/links.html>

### **Information Access & Research**

Interactive tools designed to aid students and professionals with their online research.

<http://www.noodletools.com/>

A great, all-inclusive web site, providing links to activities and resources across all content areas.

<http://school.discovery.com/schrockguide/>

Strategies that should students know in order to effectively search the resources of the Internet

<http://www.cybersmartcurriculum.org/home/>

### **Social Aspects**

This site empowers students to use the Internet safely, responsibility and effectively

<http://www.cybersmartcurriculum.org/home/>

### **SUGGESTED SOFTWARE**

Kidspiration/Inspiration

Kid Pix 4

Microsoft Office

AppleWorks

Read, Write, and Type

Type to Learn

# Technological Literacy

## THE VISION

Technology, any modification of the natural world designed by human beings to solve human problems, enhance human life, or extend human capability, was identified by the United States Department of Labor as an essential workplace competency in a 1992 report called the Secretary's Commission on Achieving Necessary Skills (SCANS). SCANS stated that students should be able to select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment. The Department of Education recognized its importance by including technology in the original cross-content workplace readiness standards. In keeping with today's technological society, technological literacy has been further emphasized by its inclusion as a separate standards area which focuses on both computer and information literacy and technology education. Technology is evolving at an amazing rate, with both frequent advancements of existing technology and the creation of new technologies. All students must understand and be comfortable with the concepts and application of technology, not only in order to function in today's complex society, but also to become informed and productive adults of tomorrow.

### **Computer and Information Literacy**

Computer and information literacy, which supports skills in information-gathering, information-organizing, and problem solving, has become critical for every student whether college- or workplace-bound. Colleges and employers are now demanding that students and employees possess a broad range of computer and information literacy proficiencies. More and more retail purchasing is being done on-line every year, and all but the most menial of positions now require a significant understanding of computer and information literacy. To ensure that students are computer literate, a separate standard that defines rigorous, in-depth learning has been included. The computer and information literacy standard is designed to be integrated and applied in all of the content areas of the Core Curriculum Content Standards.

### **Technology Education**

The technology education standard was developed to ensure the literacy needed by all students to succeed in a highly technological world. Business and industry has clearly stated the need for technological skills in the workplace of the 21st Century.

This standard is based on the *Standards for Technological Literacy (STL): Content for the Study of Technology (ITEA, 2000)*, developed as part of the National Science Foundation (NSF)/National Aeronautics and Space Administration (NASA) funded by the *Technology for All Americans (TfAA)* project.

A study by DeKlerk has found that students form negative attitudes about the technological world if there are no formal technological experiences during the early school years. This finding is a great concern to New Jersey business and industry. Other cognitive research suggests that "design-based learning" is important. Early studies with design and technology curriculum indicate that students who learn important technological concepts develop positive attitudes about technology, math, science and learning in general.

For these reasons, an introduction to technology education, including engineering and technological design, is an essential component of a thorough and efficient K-12 education.

## STANDARD 8.1

### Computer and Information Literacy

*ALL STUDENTS WILL USE COMPUTER APPLICATIONS TO GATHER  
AND ORGANIZE INFORMATION AND TO SOLVE PROBLEMS.*

**Descriptive Statement:** Using computer applications and technology tools students will conduct research, solve problems, improve learning, achieve goals, and produce products and presentations in conjunction with standards in all content areas, including career education and consumer family, and life skills. They will also develop, locate, summarize, organize, synthesize, and evaluate information for lifelong learning.

### Strands and Cumulative Progress Indicators

*By the end of Grade 4, students will:*

#### **8.1.4 A. Basic Computer Skills and Tools**

1. Use basic technology vocabulary.
2. Use basic features of an operating system (e.g., accessing programs, identifying and selecting a printer, finding help).
3. Input and access text and data, using appropriate keyboarding techniques or other input devices.
4. Produce a simple finished document using word processing software.
5. Produce and interpret a simple graph or chart by entering and editing data on a prepared spreadsheet template.
6. Create and present a multimedia presentation using appropriate software.
7. Create and maintain files and folders.
8. Use a graphic organizer.
9. Use basic computer icons.

#### **8.1.4 B. Application of Productivity Tools**

##### ***Social Aspects***

1. Discuss the common uses of computer applications and identify their advantages and disadvantages.
2. Recognize and practice responsible social and ethical behaviors when using technology, and understand the consequences of inappropriate use including:
  - . Internet access
  - . Copyrighted materials
  - . On-line library resources
  - . Personal security and safety issues
3. Practice appropriate Internet etiquette.
4. Recognize the ethical and legal implications of plagiarism of copyrighted materials.

### ***Information Access and Research***

5. Recognize the need for accessing and using information.
6. Identify and use web browsers, search engines, and directories to obtain information to solve real world problems.
7. Locate specific information by searching a database.
8. Recognize accuracy and/or bias of information.

### ***Problem Solving and Decision Making***

9. Solve problems individually and/or collaboratively using computer applications.
10. Identify basic hardware problems and solve simple problems.

*Building upon knowledge and skills gained in preceding grades, by the end of Grade 8, students will:*

#### **8.1.8 A. Basic Computer Skills and Tools**

1. Use appropriate technology vocabulary.
2. Use common features of an operating system (e.g., creating and organizing files and folders).
3. Demonstrate effective input of text and data, using touch keyboarding with proper technique.
4. Input and access data and text efficiently and accurately through proficient use of other input devices, such as the mouse.
5. Create documents with advanced text-formatting and graphics using word processing.
6. Create a file containing customized information by merging documents.
7. Construct a simple spreadsheet, enter data, and interpret the information.
8. Design and produce a basic multimedia project.
9. Plan and create a simple database, define fields, input data, and produce a report using sort and query.
10. Use network resources for storing and retrieving data.
11. Choose appropriate electronic graphic organizers to create, construct, or design a document.
12. Create, organize and manipulate shortcuts.

#### **8.1.8 B. Application of Productivity Tools**

##### ***Social Aspects***

1. Demonstrate an understanding of how changes in technology impact the workplace and society.
2. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse.
3. Explain the purpose of an Acceptable Use Policy and the consequences of inappropriate use of technology.
4. Describe and practice safe Internet usage.
5. Describe and practice “etiquette” when using the Internet and electronic mail.

### ***Information Access and Research***

6. Choose appropriate tools and information resources to support research and solve real world problems, including but not limited to:
  - . On-line resources and databases
  - . Search engines and subject directories
7. Evaluate the accuracy, relevance, and appropriateness of print and non-print electronic information sources.

### ***Problem Solving and Decision Making***

8. Use computer applications to modify information independently and/or collaboratively to solve problems.
9. Identify basic hardware problems and demonstrate the ability to solve common problems.
10. Determine when technology tools are appropriate to solve a problem and make a decision.

## STANDARD 8.2

### Technology Education

*ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN, AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, SOCIETY, AND THE ENVIRONMENT.*

**Descriptive Statement:** The following indicators are based on the Standards for Technological Literacy (STL, 2000) and support the National Academy of Engineering's (2002) call for students to gain technological literacy. Students will be expected to understand the various facets of technology and the design process. They will analyze and evaluate design options and then apply the design process to solve problems. A systems perspective is employed to emphasize the interconnectedness of all knowledge and the impact of technology and technological change. Students will be expected to use technology as it applies to physical systems, biological systems, and information and communication systems. The intent at the elementary and middle school levels is that all students develop technological literacy and are prepared for the option of further study in the field of technology education. At the elementary level, the foundation for technology education is found in the science standards, particularly standards 5.2 and 5.4.

### Strands and Cumulative Progress Indicators

*By the end of Grade 4, students will:*

#### **8.2.4 A. Nature and Impact of Technology**

Refer to Science Standards 5.2 and 5.4.

#### **8.2.4 B. Design Process and Impact Assessment**

Refer to Science Standards 5.2 and 5.4.

### **8.2.4 C. Systems in the Designed World**

Refer to Science Standards 5.2 and 5.4.

*Building upon knowledge and skills gained in the preceding grades, by the end of Grade 8, students will:*

#### **8.2.8 A. Nature and Impact of Technology**

1. Describe the nature of technology and the consequences of technological activity.
2. Describe how components of a technological product, system, or environment interact.
3. Describe how one technological innovation can be applied to solve another human problem that enhances human life or extends human capability.
4. Describe how technological activity has an affect on economic development, political actions, and cultural change.
5. Explain the cultural and societal effects resulting from the dramatic increases of knowledge and information available today.

#### **8.2.8 B. Design Process and Impact Assessment**

1. Demonstrate and explain how the design process is not linear.
2. Use hands on activities to analyze products and systems to determine how the design process was applied to create the solution.
3. Identify a technological problem and use the design process to create an appropriate solution.
4. Describe how variations in resources can affect solutions to a technological problem.
5. Select and safely use appropriate tools and materials in analyzing, designing, modeling or making a technological product, system or environment.

#### **8.2.8 C. Systems in the Designed World**

1. Explain technological advances in medical, agricultural, energy and power, information and communication, transportation, manufacturing, and construction technologies.
2. Explain reasons why human-designed systems, products, and environments need to be monitored, maintained, and improved to ensure safety, quality, cost efficiency, and sustainability.
3. Explain the functions and interdependence of subsystems such as waste disposal, water purification, electrical, structural, safety, climatic control, and communication.



