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INTRODUCTION TO THE PRE-K THROUGH 12 INSTRUCTIONAL TECHNOLOGY BENCHMARKS

The following document represents the expectations we have for students in their use of technology as an important tool for learning. It is based on the most recent version of the Department of Education's Instructional Technology Standards. Each grade level addresses the three distinct categories proposed in our state's frameworks:

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issues in using electronic media.

Standard 3: Demonstrate the ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. They use telecommunications and other media to interact and collaborate with peers, experts, and other audiences.

When assigning specific benchmarks to certain grades, careful consideration is given to the developmental nature of students at that grade level. We are also keenly aware that a consistently reliable infrastructure, and support for the standards through professional development, are both essential to their implementation.

The use of the word, "technology" embraces a wide and ever-expanding variety of resources our students will need to be able to use effectively for many personal, educational, and professional purposes throughout their lives. Students can use these resources to do research, locate, gather and analyze information, nurture curiosity and develop a deeper understanding of the world around them, solve problems, and communicate with others. Our goal is to enable our students to confidently and competently utilize technology to enrich and enhance their lives.

This document reflects the input of teachers, administrators, parents, and community representatives. We appreciate the effort of all who took the time to carefully review the first draft for the sake of the students it will ultimately benefit. We'd also like to recognize the specific efforts of Sue Herook and Sue McBride for their invaluable insights and expertise.

Sincerely,

Patricia Muxie, Director of Curriculum
August 2008

Instructional Technology Standards Pre-K

Note: Standards are promoted within the context of developing language and social interactions, which are priorities at the pre-K level.

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.1 Develop the basic skills of:
 - Turning a computer on and off
 - Using a mouse properly and effectively
 - Opening and closing an application which appears on the desktop.
- 1.2 Use correct terminology for basic components of a computer system: mouse, printer, keyboard, and monitor.
- 1.10 Explore the use of drawing and painting applications.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issues in using electronic media.

- 2.1 Follow classroom rules for responsible use of computers.
- 2.2 Develop understanding of the school's rules for safe and ethical Internet use. (Use of Internet in this grade span is under close teacher supervision and determined by district policy.)
- 2.4 Develop an understanding of how the computer is a tool for learning.

Standard 3: Demonstrate the ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.3 Explore content specific software/websites to enhance understanding of the curriculum.
- 3.5 Collaborate with classmates and the teacher to exchange e-mail with another classroom (full-class activity).

Instructional Technology Standards **Kindergarten**

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.1 Develop the basic skills of turning a computer on and off, using a mouse properly and effectively, and opening and closing an application which appears on the desktop.
- 1.2 Use correct terminology for basic components of a computer system: mouse, printer, keyboard, and monitor.
- 1.9 Collaborate with teacher to create a slide presentation using drawing and printing applications.
- 1.10 Explore the use of drawing and painting applications.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.3 Follow classroom rules for responsible use of computers.
- 2.4 Develop understanding of the school's rules for safe and ethical Internet use. (Use of the Internet at this grade level is under close teacher supervision and determined by district policy.)
- 2.4 Develop understanding of how the computer is a tool for learning.

Standard 3: Demonstrate the ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.3 Explore content-specific software/websites to enhance understanding of the curriculum (e.g., KidPix).
- 3.5 Collaborate with classmates and the teacher to exchange e-mail with another Classroom (full-class activity).

Instructional Technology Standards

Grade 1

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.1 Develop the basic skills of: navigating using scroll bar, navigating using arrow keys and using shift/return/delete/space bar/caps lock.
- 1.3 Use informal keyboarding skills to type simple sentences.
- 1.7 Collaborate with teacher to use selected websites.
- 1.8 Collaborate with teacher to send a class e-mail message (at the discretion of district and teacher).
- 1.10 Use drawing and painting applications for class presentations (KidPix).

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.1 Follow classroom rules for responsible use of computers.
- 2.2 Develop understanding of the school's rules for safe and ethical Internet use. (Use of Internet at this grade level is under close teacher supervision and determined by district policy.)
- 2.4 Develop an understanding of how the computer is a tool for learning.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.1 Explore understanding of how to gather information from a variety of electronic sources, including teacher-selected Web sites, online databases, and automated card catalog.
- 3.5 Collaborate with classmates and teacher to exchange e-mail *with another classroom* (at discretion of district and teacher).

Instructional Technology Standards
Grade 2

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.1 Develop the basic skills of: navigating using scroll bar, navigating using arrow keys and using shift/return/delete/space bar/caps lock.
- 1.3 Develop an awareness of the keyboard by typing simple sentences/poems.
- 1.7 Collaborate with teacher to use selected websites.
- 1.8 Collaborate with teacher to send a class e-mail message (at the discretion of district and teacher).
- 1.9 Collaborate with teacher to create a slide presentation with existing template (KidPix).
- 1.10 Use drawing and painting applications for class presentations.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.1 Follow classroom rules for responsible use of computers.
- 2.2 Develop understanding of the school's rules for safe and ethical Internet use. (Use of Internet in this grade span is under close supervision and determined by district policy.)
- 2.4 Develop an understanding of how the computer is a tool for learning.

Standard 3: Demonstrate the ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.1 Explore understanding of how to gather information from a variety of electronic sources, including teacher-selected Web sites, CD-ROM encyclopedias, online databases, and automated card catalog.
- 3.5 Collaborate with classmates and teacher to exchange e-mail with another classroom (at discretion of district and teacher).

Instructional Technology Standards

Grade 3

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.1 Develop the basic skills of opening and closing a student-made file and saving work.
- 1.3 Develop and practice formal keyboarding skills.
- 1.4 Explore basic formatting features of a word processing program.
- 1.5 Learn vocabulary and functions related to databases.
- 1.7 Use curriculum-related websites.
- 1.8 Collaborate with the teacher to send a class e-mail message (at the discretion of district and teacher).
- 1.9 Collaborate with teacher to create a slide presentation.
- 1.10 Use drawing and painting applications for class projects.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.1 Follow classroom rules for responsible use of computers.
- 2.2 Develop understanding of the school's rules for safe and ethical Internet use. (Use of the Internet at this grade level is under close teacher supervision and determined by district policy.)
- 2.3 Explore practices for evaluating Web sites. (District policy determines Internet use.)
- 2.4 Develop an understanding of how the computer is a tool for learning.
- 2.5 Explore issues of ergonomics and safety in using computers.

Standard 3: Demonstrate the ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.1 Develop understanding of how to gather information from a variety of electronic sources, including teacher-selected Web sites, CD-ROM encyclopedias, online databases, and automated card catalog.
- 3.2 Using Graph Club, explore the use of application programs (e.g., word processing, database, spreadsheet) for organizing information into charts, tables, and diagrams.
- 3.4 Collaborate with classmates and teacher in creating a multimedia presentation to communicate learning with others.
- 3.5 Collaborate with classmates and teacher to exchange e-mail with another classroom (at discretion of district and teacher).

Instructional Technology Standards **Grade 4**

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.1 Develop the basic skills of opening and closing a student-made file and saving work.
- 1.3 Develop, practice and master formal keyboarding skills.
- 1.4 Explore basic formatting features of a word processing program (at teacher's discretion).
- 1.5 Learn vocabulary and functions related to databases.
- 1.7 Use appropriate curriculum-related websites.
- 1.8 Collaborate with teacher to send a class e-mail message (at the discretion of district and teacher).
- 1.9 Collaborate with teacher to create a slide presentation.
- 1.10 Use drawing and painting applications for class projects.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.1 Follow classroom rules for responsible use of computers.
- 2.2 Develop understanding of the school's rules for safe and ethical Internet use. (Use of the Internet at this grade level is under close teacher supervision and determined by district policy.)
- 2.3 Explore practices for evaluating Web sites (district policy determines Internet use.)
- 2.4 Develop understanding of how the computer is a tool for learning.
- 2.5 Explore issues of ergonomics and safety in using computers.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.1 Develop understanding of how to gather information from a variety of electronic sources, including appropriate teacher-selected Web sites, online databases, CD-ROM encyclopedias, and automated card catalog.
- 3.2 Using Graph Club, explore the use of application programs (e.g., word processing, database, spreadsheet) for organizing information into charts, tables, and diagrams.
- 3.4 Collaborate with classmates and teacher in creating a multimedia presentation to communicate learning with others.
- 3.5 Collaborate with classmates and teacher to exchange e-mail with another classroom (at discretion of district and teacher).

Instructional Technology Standards **Grade 5**

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.5 Explore and understand the terminology related to a database. Understand the purpose of a database.
- 1.6 Explore and understand the terminology related to a spreadsheet. Understand the purpose of a spreadsheet.
- 1.11 Identify components of a computer system, understand their functions, and use appropriate terminology in speaking about them (e.g., operating system, hard drive, memory, window).
- 1.12 Create folders on a local hard drive and on shared drive.
- 1.13 Save a file to the desktop, the hard drive, and external storage spaces (e.g., shared drive, CD-ROM).
- 1.14 Select a printer and print a document with appropriate page setup and orientation.
- 1.15 Operate peripheral equipment (e.g., scanner, digital camera).
- 1.16 Develop efficient keyboarding techniques.
- 1.17 Explore editing and formatting features of a word processing program (e.g., centering, line spacing, margins, cut and paste, fonts, styles, spelling, page numbers).
- 1.18 Insert images (e.g., graphics, clip art, tables) from other files into word-processed document.
- 1.25 Identify and use navigation features of a browser (e.g., “go”, “back”, “forward”).
- 1.26 Using a browser, “bookmark” a Web site for future reference.
- 1.27 Identify basic elements of a Web site (e.g., URL, hyperlinks, site map, etc.).
- 1.28 With teacher guidance, create and send a class e-mail message.
- 1.31 Use correct terminology in speaking about electronic communications (e.g., browser, search engine, online).
- 1.33 Identify and use drawing and painting applications as appropriate for class projects.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.6 Explain and demonstrate understanding of classroom rules regarding responsible use of computers (responsible behavior around equipment, respect for other people’s work, and appropriate collaborative behavior).
- 2.7 Explain ethical and legal behavior in copying files, applications, and media.
- 2.8 Understand potential problem of computer viruses and exercise caution in opening e-mail attachments from unknown sources. (Use of e-mail is at district discretion.)
- 2.9 Explain safe practices for sharing personal information via e-mail and the Internet. (Use of e-mail is at district discretion.)
- 2.10 Explain proper e-mail etiquette. (Use of e-mail is at district discretion.) Continued

- 2.11 Describe and demonstrate knowledge of the school’s Acceptable Use Policy, and know the consequences of violating that policy.
- 2.13 Explain how media and technology can be misused to distort or exaggerate information.
- 2.14 Explore writing correct citations for text and images gathered from electronic sources. Understand that use of materials is limited by the fair use rule of copyright law.
- 2.15 Develop an awareness of the issue of ergonomics (e.g., Repetitive Stress Injuries).

Standard 3: Demonstrate the ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.6 In keeping with the research process outlined in Standard 24 of the *English Language Arts Curriculum Framework*, identify appropriate electronic sources matched to your purpose.
- 3.8 Explore organizing information that is collected using a variety of tools (e.g., spreadsheet, database, saved files).
- 3.9 Communicate results of research and learning with others using the most appropriate tools (e.g., desktop-published or word-processed report, multimedia presentation).
- 3.10 Explore manipulating data using charting tools and graphic organizers (e.g., concept mapping, flow charting, and outlining software) to connect ideas and organize information.
- 3.11 Under teacher’s guidance, and at discretion of district, use e-mail to communicate with others (e.g., students in other classrooms, experts in a subject).

Instructional Technology Standards **Grade 6**

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.11 Identify components of a computer system, understand their functions, and use appropriate terminology in speaking about them (e.g., operating system, hard drive, memory, window).
- 1.12 Create folders on a local hard drive and on shared drive.
- 1.13 Save a file to the desktop, the hard drive, and external storage spaces (e.g., shared drive, CD-ROM).
- 1.14 Select a printer and print a document with appropriate page setup and orientation.
- 1.15 Operate peripheral equipment (e.g., scanner, digital camera).
- 1.16 Develop efficient keyboarding techniques.
- 1.17 Begin to develop editing and formatting features of a word processing program (e.g., centering, line spacing, margins, cut and paste, fonts, styles, spelling, page numbers).
- 1.18 Insert images (e.g., graphics, clip art, tables) from other files into word-processed documents.
- 1.25 Identify and use navigation features of browser (e.g., “go”, “back”, “forward”).
- 1.26 Using a browser, “bookmark” a web site for future reference.
- 1.27 Identify basic elements of a Web site (e.g., URL, hyperlinks, site map, etc.).
- 1.29 With teacher guidance, create and send a class e-mail message.
- 1.31 Use correct terminology in speaking about electronic communications (e.g., browser, search engine, online).
- 1.32 Create a slide presentation using appropriate applications.
- 1.33 Identify and use drawing and painting applications as appropriate for class projects.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.6 Explain and demonstrate understanding of classroom rules regarding responsible use of computers (responsible behavior around equipment, respect for other people’s work, and appropriate collaborative behavior).
- 2.7 Explain ethical and legal behavior in copying files, applications, and media.
- 2.8 Understand potential problem of computer viruses and exercise caution in opening e-mail attachments from unknown sources. (Use of e-mail is at district discretion.)
- 2.9 Explain safe practices for sharing personal information via e-mail and the Internet. (Use of e-mail is at district discretion.)
- 2.10 Explain proper e-mail etiquette. (Use of e-mail is at district discretion.)

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- 2.11 Describe and demonstrate knowledge of the school's Acceptable Use Policy, and know the consequences of violating that policy.
- 2.13 Explain how media and technology can be misused to distort or exaggerate information.
- 2.14 Explore writing correct citations for text and images gathered from electronic sources. Understand that use of materials is limited by the fair use rule of copyright law.
- 2.15 Develop an awareness of the issue of ergonomics (e.g., Repetitive Stress Injuries) and how to use equipment safely.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.6 In keeping with the research process outlined in Standard 24 of the *English Language Arts Curriculum Framework*, identify appropriate electronic sources matched to your purpose.
- 3.8 Develop the skill of organizing information that is collected using a variety of tools (e.g., spreadsheet, database, saved files).
- 3.9 Communicate results of research and learning with others using the most appropriate tools (e.g., desktop-published or word-processed report, multimedia presentation).
- 3.10 Develop the skill of manipulating data using charting tools and graphic organizers (e.g., concept mapping, flow charting, and outlining software) to connect ideas and organize information.
- 3.11 Under teacher's guidance, and at discretion of district, use e-mail to communicate with others (e.g., students in other classrooms, experts in a subject, teachers).

Instructional Technology Standards

Grade 7

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.5 Explore and understand the terminology related to a database. Understand the purpose of a database.
- 1.6 Explore and understand the terminology related to a spreadsheet. Understand the purpose of a spreadsheet.
- 1.19 Explore structure and function of a database and identify components.
- 1.20 Explore creating an original database, defining field formats and adding new records.
- 1.21 Explore performing simple operations in a database (e.g., browse, sort, search, delete, add data).
- 1.22 Explore describing structure and function of spreadsheet (e.g., cells, rows, columns, formulas) and apply formatting features.
- 1.23 Explore creating an original spreadsheet, entering simple formulas.
- 1.24 Explore producing simple charts from spreadsheet.
- 1.28 Copy an image from a Web site into a file on the desktop. Write a correct citation caption in keeping with copyright law.
- 1.30 Open an e-mail attachment and save it to the desktop. (District discretion applies.)
- 1.31 Use correct terminology in speaking about electronic communications (e.g., browser, search engine, online).
- 1.33 Identify and use drawing and painting applications as appropriate for class projects.
- 1.34 Identify appropriate applications for a classroom project.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.6 Explain and demonstrate understanding of classroom rules regarding responsible use of computers (responsible behavior around equipment, respect for other people's work, and appropriate collaborative behavior).
- 2.7 Demonstrate ethical and legal behavior in copying files, applications, and media.
- 2.8 Understand potential problem of computer viruses and exercise caution in opening e-mail attachments from unknown sources. (Use of e-mail is at district discretion.)
- 2.9 Explain safe practices for sharing personal information via e-mail and the Internet. (Use of e-mail is at district discretion.)
- 2.10 Explain proper e-mail etiquette. (Use of e-mail is at district discretion.)
- 2.11 Describe and demonstrate knowledge of the school's Acceptable Use Policy, and know the consequences of violating that policy.
- 2.12 Validate a web site for authenticity (e.g., find site sponsor, author, and date the site was last updated). **Continued**

- 2.13 Explain how media and technology can be misused to distort or exaggerate information.
- 2.14 Demonstrate writing correct citations for text and images gathered from electronic sources. Understand that use of materials is limited by the fair use rule of copyright law.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.6 In keeping with the research process outlined in Standard 24 of the *English Language Arts Curriculum Framework*, identify appropriate electronic sources matched to your purpose.
- 3.7 Use search engines effectively to find relevant, unbiased, and current information on a subject. (Standard 2 performance indicators apply: evaluate web sites and write correct citations for sources.)
- 3.8 Demonstrate organization of information that is collected using a variety of tools (e.g., spreadsheet, database, and saved files).
- 3.9 Communicate results of research and learning with others using the most appropriate tools (e.g., desktop-published or word-processed report, multimedia presentation).
- 3.10 Using Inspiration or PowerPoint, manipulate data using charting tools and graphic organizers (e.g., concept mapping, flow charting, and outlining software) to connect ideas and organize information.
- 3.11 Under teacher's guidance, and at discretion of district, use e-mail to communicate with others (e.g., students in other classrooms, experts in a subject, teachers).

Instructional Technology Standards **Grade 8**

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.19 Describe structure and function of databases and spreadsheets and identify components.
- 1.20 Create an original database, defining field formats and adding new records.
- 1.21 Perform simple operations in a database (e.g., browse, sort, search, delete, add data).
- 1.22 Describe structure and function of spreadsheet (e.g., cells, rows, columns, formulas) and apply formatting features.
- 1.23 Create an original spreadsheet, entering simple formulas.
- 1.24 Produce simple charts from spreadsheet.
- 1.28 Copy an image from a Web site into a file on the desktop. Write a correct citation caption in keeping with copyright law.
- 1.30 Open an e-mail attachment and save it to the desktop. (District discretion applies.)
- 1.31 Use correct terminology in speaking about electronic communications (e.g., browser, search engine, online).
- 1.33 Identify and use drawing and painting applications as appropriate for class projects.
- 1.34 Identify appropriate applications for a classroom project.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

- 2.6 Demonstrate understanding of classroom rules regarding responsible use of computers (e.g., responsible behavior around equipment, respect for other people's work, and appropriate collaborative behavior).
- 2.7 Demonstrate ethical and legal behavior in copying files, applications, and media.
- 2.8 Understand potential problem of computer viruses and exercise caution in opening e-mail attachments from unknown sources. (Use of e-mail is at district discretion.)
- 2.9 Explain safe practices for sharing personal information via e-mail and the Internet. (Use of e-mail is at district discretion.)
- 2.10 Explain proper e-mail etiquette. (Use of e-mail is at district discretion.)
- 2.11 Describe and demonstrate knowledge of the school's Acceptable Use Policy, and know the consequences of violating that policy.
- 2.12 Validate a web site for authenticity (e.g., find site sponsor, author, and date the site was last updated).
- 2.13 Explain how media and technology can be misused to distort or exaggerate information.
- 2.14 Demonstrate writing correct citations for text and images gathered from

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electronic sources. Understand that use of materials is limited by the fair use rule of copyright law.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.6 In keeping with the research process outlined in Standard 24 of the *English Language Arts Curriculum Framework*, identify appropriate electronic sources matched to your purpose.
- 3.6 Use search engines effectively to find relevant, unbiased, and current information on a subject. (Standard 2 performance indicators apply: evaluate web sites and write correct citations for sources.)
- 3.8 Demonstrate organization of information that is collected using a variety of tools (e.g., spreadsheet, database, and saved files).
- 3.9 Communicate results of research and learning with others using the most appropriate tools (e.g., desktop-published or word-processed report, multimedia presentation).
- 3.10 Using Inspiration or PowerPoint, manipulate data using charting tools and graphic organizers (e.g., concept mapping, flow charting, and outlining software) to connect ideas and organize information.
- 3.11 Under teacher's guidance, and at discretion of district, use e-mail to communicate with others (e.g., students in other classrooms, experts in a subject, teachers).

Instructional Technology Standards **Grade 9**

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.35 Demonstrate file management skills (e.g., install new software, compress and expand files as needed, download files as appropriate).
- 1.36 Run multiple applications simultaneously, alternating among them.
- 1.37 Resolve commonly occurring error messages. Resolve simple hardware and software problems as they occur (e.g., frozen screen, disk error, printing problems).
- 1.38 Identify and use methods for transferring, downloading, and converting graphic, sound, and video files. Use different graphic file formats where appropriate (e.g., PICT, TIFF, JPEG).
- 1.39 Save (also retrieve, load, and import) a word-processed document in different file formats (e.g., RTF, HTML).
- 1.40 Use a variety of external peripherals (e.g., printers, flash drives, scanner, digital camera) and understand how they connect to a computer.
- 1.41 Demonstrate efficient keyboarding techniques.
- 1.42 Explore importing/exporting and linking data between word-processed document and other applications.
- 1.43 Duplicate database structure without data.
- 1.44 Explore using features of a database program such as mailing labels and mail merges.
- 1.45 Explore importing/exporting and linking data between database and other applications.
- 1.46 Use advanced formatting features of a spreadsheet application (e.g., reposition columns and rows, add and name worksheets).
- 1.47 Use simple formulas in a spreadsheet application.
- 1.48 Explore importing/exporting data between spreadsheet and other applications.
- 1.50 Define and use functions of a spreadsheet such as sort, filter, find.
- 1.51 In a spreadsheet application, use various number formats (e.g., scientific notation)
- 1.52 In a browser, organize bookmarks into folders for future reference.
- 1.53 Know how to select and use search engines. Understand the differences between search engines.
- 1.57 Create a multimedia presentation, desktop-published report, or web page that incorporates data from other files.
- 1.58 Explore creating and manipulating illustrations using a drawing or painting program (e.g., adjust scale, size, shape).
- 1.59 Identify capabilities of technology resources and understand how they can be used for lifelong learning.
- 1.60 Select the appropriate technology tool for a task. **Continued**

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

Continue to practice and master Grade 8 Standard 2 skills. In addition:

- 2.16 Identify ways in which technology is used in the workplace and in society
- 2.17 Demonstrate a clear understanding of the school's Acceptable Use Policy
- 2.18 Explain and follow laws restricting use of copyrighted materials on the Internet
- 2.19 Explain how to evaluate electronic sources of information
- 2.20 Cite electronic sources correctly
- 2.21 Understand issues of ergonomics and practice safe use of equipment.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.12 In conducting research use all appropriate electronic sources (e.g., web sites, online periodical databases, online catalogs).
- 3.13 Integrate, with correct citations, electronic research results into a research project.
- 3.14 Routinely evaluate web sites for authenticity when using the ABC format or a comparable rubric.
- 3.15 Present information, ideas, and results of work using any of a variety of communications technologies (e.g., multimedia presentations, web pages, videotapes, desktop-published documents).
- 3.16 Collect, organize, analyze, and graphically present data using the most appropriate tools (e.g., spreadsheet, database, graphing, and concept-mapping tools).
- 3.17 Import graphics, photos, and other media into report or presentation, citing sources appropriately.
- 3.18 Explore creating multiple links among various pieces of information residing in different applications (e.g., a chart imported from a spreadsheet into a word-processed report can be linked to update automatically when the data is changed in the spreadsheet).
- 3.19 Demonstrate how specialized technology tools can be used for problem solving, decision-making, and creativity (e.g., simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software).
- 3.20 Understand the function of electronic conferencing tools such as Internet bulletin boards, listserv, electronic classrooms, and interactive video.

Instructional Technology Standards

Grade 10

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.35 Develop file management skills (e.g., install new software, compress and expand files as needed, download files as appropriate).
- 1.37 Resolve commonly occurring error messages. Resolve simple hardware and software problems as they occur (e.g., frozen screen, disk error, printing problems).
- 1.38 Identify and use methods for transferring, downloading, and converting graphic, sound, and video files. Use different graphic file formats where appropriate (e.g., PICT, TIFF, JPEG).
- 1.39 Save (also retrieve, load, and import) a word-processed document in different file formats (e.g., RTF, HTML).
- 1.40 Use a variety of external peripherals (e.g., printers, flash drives, scanner, digital camera) and understand how they connect to a computer.
- 1.41 Demonstrate efficient keyboarding techniques.
- 1.42 Develop the skill of importing/exporting and linking data between a word-processed document and other applications.
- 1.44 Develop the skill of using features of a database program such as mailing labels and mail merges.
- 1.45 Develop the skill of importing/exporting and linking data between a database and other applications.
- 1.47 Use formulas in a spreadsheet application.
- 1.48 Develop the skill of importing/exporting data between a spreadsheet and other applications.
- 1.51 In a spreadsheet application, use various number formats (e.g., scientific notation, percentages, exponents) as appropriate.
- 1.52 In a browser, organize bookmarks into folders for further reference.
- 1.53 Know how to select and use search engines. Understand the differences between search engines.
- 1.57 Create a multimedia presentation, desktop-published report, or Web page that incorporates data from other files.
- 1.58 Develop the skill of creating and manipulating illustrations using a drawing or painting program (e.g., adjust scale, size, and shape).
- 1.60 Select the appropriate technology tool for a task.

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

Continue to practice and master Grade 9 Standard 2 skills. In addition:

- 2.16 Identify ways in which technology is used in the workplace and in society
- 2.17 Demonstrate a clear understanding of the school's Acceptable Use Policy

Continued

- 2.18 Explain and follow laws restricting use of copyrighted materials on the Internet
- 2.19 Explain how to evaluate electronic sources of information
- 2.20 Cite electronic sources correctly
- 2.21 Understand issues of ergonomics and practice safe use of equipment.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.12 In conducting research, use all appropriate electronic sources (e.g., web sites, online periodical databases, online catalogs).
- 3.13 Integrate (with correct citations) electronic research results into a research project.
- 3.14 Routinely evaluate web sites for authenticity when using the ABC format or a comparable rubric.
- 3.15 Present information, ideas, and results of work using any of a variety of communications technologies (e.g., multimedia presentations, web pages, videotapes, desktop-published documents).
- 3.16 Collect, organize, analyze, and graphically present data using the most appropriate tools (e.g., spreadsheet, database, graphing, and concept-mapping tools).
- 3.17 Import graphics, photos, and other media into report or presentation, citing sources appropriately.
- 3.18 Explore creating multiple links among various pieces of information residing in different applications (e.g., a chart imported from a spreadsheet into a word-processed report can be linked to update automatically when the data is changed in the spreadsheet).
- 3.19 Demonstrate how specialized technology tools can be used for problem solving, decision-making, and creativity (e.g., simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software).
- 3.20 Understand the function of electronic conferencing tools such as Internet bulletin boards, listserv, electronic classrooms, and interactive video.

Instructional Technology Standards

Grade 11

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.35 Demonstrate file management skills (e.g., install new software, compress and expand files as needed, download files as appropriate).
- 1.37 Resolve commonly occurring error messages. Resolve simple hardware and software problems as they occur (e.g., frozen screen, disk error, printing problems).
- 1.38 Identify and use methods for transferring, downloading, and converting graphic, sound, and video files. Use different graphic file formats where appropriate (e.g., PICT, TIFF, JPEG).
- 1.39 Save (also retrieve, load, and import) a word-processed document in different file formats (e.g., RTF, HTML).
- 1.40 Use a variety of external peripherals (e.g., printers, flash drives, scanner, digital camera) and understand how they connect to a computer.
- 1.41 Perform efficient keyboarding technique.
- 1.42 Demonstrate importing/exporting and linking data between a word-processed document and other applications.
- 1.44 Demonstrate using features of a database program such as mailing labels and mail merges.
- 1.45 Demonstrate importing/exporting and linking data between database and other applications.
- 1.47 Use a wide variety and more advanced formulas in a spreadsheet application.
- 1.48 Demonstrate importing/exporting data between spreadsheet and other applications
- 1.49 Customize formatting of charts or graphs created in spreadsheet.
- 1.53 Know how to select and use search engines. Understand the differences between search engines.
- 1.54 Explain effective search strategies to locate and retrieve electronic information (e.g., understand and use syntax and Boolean logic operators).
- 1.55 Under direct teacher supervision, use e-mail, create an address book. (Use of e-mail is at district discretion and may be a class-wide activity if students do not have individual accounts.)
- 1.57 Create a multimedia presentation, desktop-published report, or web page that incorporates data from other files.
- 1.58 Demonstrate creating and manipulating illustrations using a drawing or painting program (e.g., adjust scale, size, and shape).
- 1.60 Select the appropriate technology tool for a task.

Continued

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

Continue to practice and master Grade 10 Standard 2 skills. In addition:

- 2.17 Demonstrate a clear understanding of the school's Acceptable Use Policy
- 2.18 Explain and follow laws restricting use of copyrighted materials on the Internet
- 2.19 Explain how to evaluate electronic sources of information
- 2.20 Cite electronic sources correctly
- 2.21 Understand issues of ergonomics and practice safe use of equipment.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 3.12 In conducting research, use all appropriate electronic sources (e.g., web sites, online periodical databases, online catalogs).
- 3.13 Integrate (with correct citations) electronic research results into a research project.
- 3.14 Routinely evaluate web sites for authenticity when using the ABC format or a comparable rubric.
- 3.15 Present information, ideas, and results of work using any of a variety of communications technologies (e.g., multimedia presentations, Web pages, videotapes, desktop-published documents).
- 3.16 Collect, organize, analyze, and graphically present data using the most appropriate tools (e.g., spreadsheet, database, graphing, and concept-mapping tools).
- 3.18 Develop and demonstrate creating multiple links among various pieces of information residing in different applications (e.g., a chart imported from a spreadsheet into a word-processed report can be linked to update automatically when the data is changed in the spreadsheet).
- 3.19 Demonstrate how specialized technology tools can be used for problem solving, decision-making, and creativity (e.g., simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software).

Instructional Technology Standards

Grade 12

Standard 1: Demonstrate proficiency in the use of computers and applications as well as an understanding of concepts underlying hardware, software, and connectivity.

- 1.35 Demonstrate file management skills (e.g., install new software, compress and expand files as needed, download files as appropriate).
- 1.37 Resolve commonly occurring error messages. Resolve simple hardware and software problems as they occur (e.g., frozen screen, disk error, printing problems).
- 1.38 Identify and use methods for transferring, downloading, and converting graphic, sound, and video files. Use different graphic file formats where appropriate (e.g., PICT, TIFF, JPEG).
- 1.39 Save (also retrieve, load, and import) a word-processed document in different file formats (e.g., RTF, HTML).
- 1.40 Use a variety of external peripherals (e.g., printers, flash drives, scanner, digital camera) and understand how they connect to a computer.
- 1.41 Perform efficient keyboarding technique.
- 1.42 Demonstrate importing/exporting and linking data between a word-processed document and other applications.
- 1.44 Demonstrate using features of a database program such as mailing labels and mail merges.
- 1.45 Demonstrate importing/exporting and linking data between database and other applications.
- 1.46 Use a wide variety and more advanced formatting features in a spreadsheet application.
- 1.47 Use formulas in a spreadsheet application.
- 1.48 Demonstrate importing/exporting data between a spreadsheet and other applications.
- 1.49 Customize formatting of charts or graphs created in spreadsheet.
- 1.53 Know how to select and use search engines. Understand the differences between search engines.
- 1.54 Explain effective search strategies to locate and retrieve electronic information (e.g., understand and use syntax and Boolean logic operators).
- 1.55 Under direct teacher supervision use e-mail, and create an address book. (Use of e-mail is at district discretion and may be a class-wide activity if students do not have individual accounts.)
- 1.57 Create a multimedia presentation, desktop-published report, or web page that incorporates data from other files.
- 1.58 Demonstrate creating and manipulating illustrations using a drawing or painting program (e.g., adjust scale, size, shape).
- 1.60 Select the appropriate technology tool for a task.

Continued

Standard 2: Demonstrate responsible use of technology and an understanding of ethics and safety issued in using electronic media.

Continue to practice and master Grade 11 Standard 2 skills. In addition:

- 2.17 Demonstrate a clear understanding of the school's Acceptable Use Policy
- 2.18 Explain and follow laws restricting use of copyrighted materials on the Internet
- 2.19 Explain how to evaluate electronic sources of information
- 2.20 Cite electronic sources correctly
- 2.21 Understand issues of ergonomics and practice safe use of equipment.

Standard 3: Demonstrate ability to use technology for research, problem-solving, and communication. Students locate, evaluate, collect, and process information from a variety of electronic sources. Students use telecommunications and other media to interact or collaborate with peers, experts, and other audiences.

- 1.7 In conducting research use all appropriate electronic sources (e.g., web sites, online periodical databases, online catalogs).
- 1.8 Integrate, with correct citations, electronic research results into a research project.
- 1.9 Routinely evaluate web sites for authenticity when using the ABC format or a comparable rubric.
- 1.10 Present information, ideas, and results of work using any of a variety of communications technologies (e.g., multimedia presentations, web pages, videotapes, desktop-published documents).
- 1.11 Collect, organize, analyze, and graphically present data using the most appropriate tools (e.g., spreadsheet, database, graphing, and concept-mapping tools).
- 3.18 Develop and demonstrate creating multiple links among various pieces of information residing in different applications (e.g., a chart imported from a spreadsheet into a word-processed report can be linked to update automatically when the data is changed in the spreadsheet).
- 3.19 Demonstrate how specialized technology tools can be used for problem solving, decision-making, and creativity (e.g., simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software).