

CHAPTER 6

What Can Be Done in Elementary School, Grades 3–5?

INTRODUCTION

This chapter contains information focusing on the Technology Applications TEKS at grades 3-5 as well as an introductory listing of **electronic**, **web**, and **printed** resources to assist in teaching the 3-5 Technology Applications TEKS and applying them across the curricular areas.

Chapter 9 contains additional resources that are appropriate for all grade levels. Instead of repeating them for each of the grade clusters, the resources have been placed into one chapter. As 3-5 educators use these materials, it is important to understand that both Chapters 5 and 9 are filled with useful resources for this grade cluster.

You will see the following items specifically for grades 3-5:

- **Frequently asked questions** about technology applications, grades 3-5.
- **Listing of the Technology Applications TEKS** for this grade cluster.
- **Model of a scope of the Technology Applications TEKS** as provided by a team of educators in Education Service Center-Region XIII.
- **Instructional examples** of teaching the Technology Applications TEKS and applying them across the curriculum.
- **Instructional resources** for teachers such as World Wide Web sites and software.
 - Dynamic, electronic resources.
 - Teacher and student resources correlated to Technology Applications TEKS and dynamically linked to over 200 active web sites from the START CD-ROM. The web resources have been indexed so that information is provided to assist educators in selecting the appropriate web sites.
 - Software resources.

- **A list of current print and media resources** that includes research, best practices, and instructional sources for teachers, technologists, curriculum directors, librarians, or others.
- **Summary.**

FREQUENTLY ASKED QUESTIONS ABOUT TECHNOLOGY APPLICATIONS, GRADES 3-5

The following have been the most frequently asked questions at grades 3-5 regarding the technology applications knowledge and skills and their application into other curriculum. The answers have been provided by the Texas Education Agency.

1. What are some of the highlights of the Technology Applications TEKS for grades 3-5?

At the 3-5 level, students build on their K-2 knowledge and skills. Students use proper keyboarding techniques, acquire information by selecting the most appropriate search strategies. They use software programs with audio, video, and graphics to enhance learning experiences. They solve problems using word processing, graphics, databases, spreadsheets, simulations, multimedia, and telecommunications. They communicate information in various formats and to a variety of audiences and evaluate their results.

2. Are schools required to teach technology applications at the elementary level, grades 3-5?

Yes, 19 TAC Chapter 74, §74.2 Description of a Required Elementary Curriculum, specifies that the district must ensure that sufficient time is provided for teachers to teach and for students to learn the essential knowledge and skills in technology applications. It is a local decision how to implement this curriculum area.

3. What are the differences between the essential elements in Chapter 75 and the essential knowledge and skills that were adopted for the elementary level in April 1997?

There are no essential elements for technology applications in Chapter 75 at the elementary level. Prior to adoption of the Technology Applications TEKS, there were no state guidelines to assist students in the implementation of technology applications at the elementary level. Now the Technology Applications TEKS can serve this purpose.

4. What should happen by the fifth grade benchmark year?

The Technology Applications TEKS for grades 3-5 are knowledge and skills that should be gained by the benchmark year of fifth grade. All grades, (third through fifth) may build toward the technology applications proficiencies listed in grades 3-5.

5. How can the use of computers and related electronic tools in the foundation and enrichment curricular areas relate to the Technology Applications TEKS?

There are numerous references to the use of computers and related technologies in the foundation areas of English/language arts and reading, mathematics, science, and social studies, as well as in the enrichment areas. Here are two examples of how the Technology Applications TEKS can merge with other curricular areas.

- a. In the “Work in Solving Problems” strand for the Technology Applications TEKS, use the foundation and enrichment curricula in the creation of products.
- b. Take other curricular areas TEKS and their references to using computers and related tools. Use the Technology Applications TEKS to assist in determining what prerequisites or supporting knowledge and skills are necessary for the student. For example, if students are using spreadsheets to compare numerical survey data and to develop charts in math, the teacher could refer to the technology applications strand on “Work in Solving Problems” for this grade cluster.

Throughout the TEKS professional development process, plans are for resources to be made available correlating the Technology Applications TEKS with other curricular areas, including this grade cluster of 3-5.

6. What state adopted instructional materials/textbooks are available for this grade level?

State adopted technology applications materials/electronic textbooks are not available for grades K-5. However, an update to the Computer Literacy Electronic Instructional Media System (EIMS) is now available to schools and its computer activities could possibly be modified for this grade cluster. For more information about this update, contact your district textbook coordinator.

Plans are for the State Board of Education to determine a schedule for textbook adoptions at its November 1997 board meeting. Updates of timelines will be available on the START Web Site. Even after the call for textbooks in proclamations, there is time needed for the development and adoption of the materials. Therefore, it is recommended for schools to review materials listed in this document as well as visit libraries and book stores and take advantage of the regional education service centers’ preview centers and training programs to see what is available.

7. Who is responsible for teaching the Technology Applications TEKS, grades 3-5?

The responsibility of who teaches the TEKS is a local decision. Some districts have the classroom teacher teaching the TEKS, while others have computer teachers teaching them. In some school districts there are campus technologists that collaborate with teachers to ensure that these TEKS are taught. A valuable resource in schools is the librarian who is trained in accessing and using information. Teacher/librarian collaboration can play an integral role in teaching and applying these Technology Applications TEKS. At this time, the certification requirement to teach this curriculum area at the K-5 level is a Texas elementary teaching certificate.

LISTING OF THE TECHNOLOGY APPLICATIONS TEKS, GRADES 3-5

The Technology Applications TEKS listed in this section were adopted by the State Board of Education in April 1997.

Chapter 126. Texas Essential Knowledge and Skills for Technology Applications

Subchapter A. Elementary

Statutory Authority: The provisions of this Subchapter A issued under the Texas Education Code, §28.002, unless otherwise noted.

§126.3. Technology Applications, Grades 3-5.

(a) Introduction.

- (1) The technology applications curriculum has four strands: foundations, information acquisition, work in solving problems, and communication.
- (2) Through the study of technology applications foundations, including technology-related terms, concepts, and data input strategies, students learn to make informed decisions about technologies and their applications. The efficient acquisition of information includes the identification of task requirements; the plan for using search strategies; and the use of technology to access, analyze, and evaluate the acquired information. By using technology as a tool that supports the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create a solution, and evaluate the results. Students communicate information in different formats and to diverse audiences. A variety of technologies will be used. Students will analyze and evaluate the results.

(b) Knowledge and skills.

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|---|---|
| <p>(1) Foundations. The student demonstrates knowledge and appropriate use of hardware components, software programs, and their connections.</p> | <p>The student is expected to:</p> <ul style="list-style-type: none">(A) use technology terminology appropriate to the task;(B) save and delete files, uses menu options and commands, and work with more than one software application;(C) identify and describe the characteristics of digital input, processing, and output;(D) delineate and make necessary adjustments regarding compatibility issues including, but not limited to, digital file formats and cross platform connectivity; and(E) access remote equipment on a network such as a printer or other peripherals. |
| <p>(2) Foundations. The student uses data input skills appropriate to the task.</p> | <p>The student is expected to:</p> <ul style="list-style-type: none">(A) use a variety of input devices such as mouse, keyboard, disk drive, modem, voice/sound recorder, scanner, digital video, CD-ROM, or touch screen; |

- (B) use proper keyboarding techniques such as correct hand and body positions and smooth and rhythmic keystroke patterns;
 - (C) demonstrate touch keyboarding techniques for operating the alphabetic, numeric, punctuation, and symbol keys as grade-level appropriate;
 - (D) produce documents at the keyboard, proofread, and correct errors;
 - (E) use language skills including capitalization, punctuation, spelling, word division, and use of numbers and symbols as grade-level appropriate; and
 - (F) demonstrate an appropriate speed on short timed exercises depending upon the grade level and hours of instruction.

- (3) **Foundations.** The student complies with the laws and examines the issues regarding the use of technology in society.
 - The student is expected to:
 - (A) follow acceptable use policies when using computers; and
 - (B) model respect of intellectual property by not illegally copying software or another individual's electronic work.

- (4) **Information acquisition.** The student uses a variety of strategies to acquire information from electronic resources, with appropriate supervision.
 - The student is expected to:
 - (A) apply appropriate electronic search strategies in the acquisition of information including keyword and Boolean search strategies; and
 - (B) select appropriate strategies to navigate and access information on local area networks (LANs) and wide area networks (WANs), including the Internet and intranet, for research and resource sharing.

- (5) **Information acquisition.** The student acquires electronic information in a variety of formats, with appropriate supervision.
 - The student is expected to:
 - (A) acquire information including text, audio, video, and graphics; and
 - (B) use on-line help and documentation.

- (6) **Information acquisition.** The student evaluates the acquired electronic information.
 - The student is expected to:
 - (A) apply critical analysis to resolve information conflicts and validate information;
 - (B) determine the success of strategies used to acquire electronic information; and

- (7) **Solving problems.** The student uses appropriate computer-based productivity tools to create and modify solutions to problems.
- (C) determine the usefulness and appropriateness of digital information.
- The student is expected to:
- (A) use software programs with audio, video, and graphics to enhance learning experiences;
- (B) use appropriate software to express ideas and solve problems including the use of word processing, graphics, databases, spreadsheets, simulations, and multimedia; and
- (C) use a variety of data types including text, graphics, digital audio, and video.
- (8) **Solving problems.** The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge.
- The student is expected to:
- (A) use communication tools to participate in group projects;
- (B) use interactive technology environments, such as simulations, electronic science or mathematics laboratories, virtual museum field trips, or on-line interactive lessons, to manipulate information; and
- (C) participate with electronic communities as a learner, initiator, contributor, or mentor.
- (9) **Solving problems.** The student uses technology applications to facilitate evaluation of work, both process and product.
- The student is expected to:
- (A) use software features, such as on-line help, to evaluate work progress; and
- (B) use software features, such as slide show previews, to evaluate final product.
- (10) **Communication.** The student formats digital information for appropriate and effective communication.
- The student is expected to:
- (A) use font attributes, color, white space, and graphics to ensure that products are appropriate for the defined audience;
- (B) use font attributes, color, white space, and graphics to ensure that products are appropriate for the communication media including multimedia screen displays, Internet documents, and printed materials; and
- (C) use appropriate applications including, but not limited to, spreadsheets and databases to develop charts and graphs by using data from various sources.

(11) **Communication.** The student delivers the product electronically in a variety of media, with appropriate supervision.

The student is expected to:

- (A) publish information in a variety of media including, but not limited to, printed copy, monitor display, Internet documents, and video; and
- (B) use presentation software to communicate with specific audiences.

(12) **Communication.** The student uses technology applications to facilitate evaluation of communication, both process and product.

The student is expected to:

- (A) select representative products to be collected and stored in an electronic evaluation tool;
- (B) evaluate the product for relevance to the assignment or task; and
- (C) create technology assessment tools to monitor progress of project such as checklists, timelines, or rubrics.

Source: The provisions of this §126.3 adopted to be effective September 1, 1998, 22 TexReg 5203.

MODEL OF A SCOPE OF THE TECHNOLOGY APPLICATIONS TEKS

When implementing the new Technology Applications TEKS curriculum at the elementary level, one will most likely participate in the development of a scope & sequence activity within the district or campus. The following is part of a K-8 Technology Applications TEKS scope document recently developed by schools in Education Service Center-Region XIII. Since both scope and sequence are local decisions, the model presented is shared as one way of scoping the new 3-5 Technology Applications TEKS.

Scope for Technology Applications TEKS (3-5) by Teachers in ESC XIII

	3	4	5
HARDWARE: Use	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency
HARDWARE: Troubleshooting and maintenance	<ul style="list-style-type: none"> • Load paper and clear jams in printer 	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency
HARDWARE: Keyboarding	<ul style="list-style-type: none"> • Demonstrate correct fingering for letters and punctuation, shift, space, and return 	<ul style="list-style-type: none"> • Know number and symbol location • Demonstrate keyboarding skills at 10 wpm 	<ul style="list-style-type: none"> • Use correct fingering of numbers and symbols • Demonstrate keyboarding skills at 15 wpm
TERMINOLOGY	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency

	3	4	5
SOFTWARE: General	<ul style="list-style-type: none"> • Use menu options, commands, and printed documentation (cut and paste, thesaurus, delete files, import clip art) • Select appropriate software to express ideas (i.e. Print Shop= greeting card, Word Processing= story) 	<ul style="list-style-type: none"> • Use productivity tools to create printed presentations (i.e. word processing, spreadsheet, and graphics) • Increase proficiency 	<ul style="list-style-type: none"> • Change documents from one format to another (i.e. open Claris document in Word) • Use productivity tools to publish or present in a variety of formats (i.e. calendars, graphs) • Increase proficiency
SOFTWARE: Word Processing and Desktop Publishing	<ul style="list-style-type: none"> • Use indent, tab, report format 	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Set margins, use justification
SOFTWARE: Data Base			
SOFTWARE: Spreadsheet, Graphic Organizers, Charts		<ul style="list-style-type: none"> • Make charts and graphs 	<ul style="list-style-type: none"> • Increase proficiency
SOFTWARE: Graphics, Drawing, CAD	<ul style="list-style-type: none"> • Using productivity template tools to create graphic presentations (i.e. banners and greeting cards) 	<ul style="list-style-type: none"> • Use productivity tools to design graphic presentations (i.e. advertisements, posters, fliers) 	<ul style="list-style-type: none"> • Increase proficiency
SOFTWARE: Multimedia	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency
SOFTWARE: Research	<ul style="list-style-type: none"> • Develop and use effective search strategies and syntax to include Boolean search strategies (Lions AND Dolphins, NOT football) 	<ul style="list-style-type: none"> • Navigate electronic information sources (i.e. LANs, WANs, Internet, Intranet) 	<ul style="list-style-type: none"> • Increase proficiency
SOFTWARE: Other	<ul style="list-style-type: none"> • Increase proficiency 	<ul style="list-style-type: none"> • Use a variety of interactive software (i.e. Oregon Trail, MayaQuest) 	<ul style="list-style-type: none"> • Use a variety of productivity software (i.e. calendar, timeline)
COMMUNICATION & PRESENTATION	<ul style="list-style-type: none"> • Publish information in a variety of media (i.e. video, Internet documents) 	<ul style="list-style-type: none"> • Interact with electronic communities (i.e. online newsgroups, post to a bulletin board) 	<ul style="list-style-type: none"> • Use presentation technology to communicate (i.e. HyperStudio or PowerPoint)
SOCIETAL ISSUES / ETHICS	<ul style="list-style-type: none"> • Demonstrate proper internet etiquette (correct identification, typing in all caps is rude) 	<ul style="list-style-type: none"> • Discuss copyright laws/issues and ethical acquisition of information 	<ul style="list-style-type: none"> • Increase proficiency • Cite electronic sources
DATA ACCESS & EVALUATION	<ul style="list-style-type: none"> • Use monitoring and self-assessment tools (i.e. calendars, checklists, timelines, or rubrics) • Increase proficiency • Increase proficiency 	<ul style="list-style-type: none"> • Create monitoring and self-assessment tools (i.e. calendars, checklists, timelines, or rubrics) • Analyze and validate conflicts in information (i.e. three sources that include same information) • Increase proficiency 	<ul style="list-style-type: none"> • Increase proficiency • Increase proficiency • Increase proficiency

INSTRUCTIONAL EXAMPLES OF TEACHING THE TECHNOLOGY APPLICATIONS TEKS AND APPLYING THEM ACROSS THE CURRICULUM, GRADES 3-5

In this section of the *Companion*, examples are given that focus on the teaching and learning of technology applications from around the state. Many of the examples may be found in full text on the START CD-ROM or the START Web Site.

Teaching the Technology Applications TEKS

Between grades 3 and 5, students will use accurate keyboarding techniques to input data into a word processor as writing skills increase. Students acquire information in a variety of ways, including, but not limited to, telecommunications, CD-ROM encyclopedias, and online catalogs in the library. Synthesized knowledge is communicated through spreadsheet charts, multimedia presentations, and word-processed files (Patsy Lanclos, testimony to the SBOE, September 11, 1996).

There are several examples in this section of schools that are teaching and applying the Technology Applications TEKS. At Lubbock ISD students learned to develop desktop publishing and presentation skills while learning more about their community: Fourth grade students visited a local apple orchard with a QuickTake camera. They took pictures, which they processed, annotated, and posted. Each student wrote a description of the visit and of the orchard, and with desktop publishing and presentation software, they produced illustrated reports and presentations (Lubbock ISD, p. 10, Ramirez Elementary School).

Many uses of computers and software applications are occurring through the Spindletop CPDT:

Ms. Moorhead's classes in grades three to five rotate into the lab, which has HyperStudio, ClarisWorks, KidPix and Netscape. Her goal is for students to be familiar with word processing, drawing and painting, spreadsheets, multimedia and the Internet. Teachers bring classes into the lab to complete various multimedia projects. For example, one fourth-grade teacher is collaborating electronically with a teacher in Kountze, Texas on a Big Thicket project (IMAGES of Technology in Texas: Spindletop (1997)).

Houston ISD gives another example of what technology applications can take place at Grades 3-5:

"Last year our Horn Elementary (Houston ISD) students received instruction in word processing, spreadsheets, Logo programming and keyboarding in grades 3-5. Most of the computer time with the younger students was spent on using creativity software such as 'Thinkin' Things', 'Easy Color Paint,' 'Kid Words 2,' (story illustrator and story writer). Students had to share computers last year so fostering cooperation was large part of what went on in the lab" (Laura Mansfield, teacher technologist at Horn Elementary School in Houston ISD).

At Lubbock ISD a fifth grade class taught technology applications knowledge and skills through a research project on Greek mythology. They wrote a play pertaining to ancient Greece, illustrated it

with pictures they created and with other pictures selected and scanned from their research, published it using HyperStudio (Lubbock ISD, page 10, Ramirez Elementary School).

Third, fourth, and fifth grade students in Yuterria Elementary School are acquiring information via the computer, CU-SeeMe technology, and mentors. Many of their experiences, are described in *IMAGES of Technology in Texas: Lower Valley CPDT* (1997) provided in the START kit, in print, on the CD-ROM, and in Web formats.

Applying the Technology Applications TEKS Across the Curriculum Areas

In the Lower Valley CPDT third grade students apply technology applications knowledge and skills through curricular contexts using multiple applications: Third-graders in the Lower Valley are using ClarisWorks for writing descriptive paragraphs, information about a ship channel oil spill from a science information project, poems, a book about magic with clip art and a table of contents, a report on Thanksgiving, an illustrated group booklet on the countries of North America, a persuasive writing paper called “A Homemade Quilt” with illustrations of a quilt, and paragraphs about New Year’s resolutions and a happy memory. And that’s just part of the list for one month (Lower Valley CPDT, from survey conducted in Brownsville and San Benito ISDs, p. 1).

An example of interdisciplinary, project-oriented learning experiences which apply the technology applications knowledge and skills is found at West University Elementary School at Houston ISD. This example shows the difference in teaching Technology Application TEKS and infusing the technology into the curriculum. In this example, fully described in the Houston ISD *IMAGES* publication, second and third grade students in the West University Elementary School participated in a “Journey to the North” project sponsored by the University of Minnesota. These students tracked the migration of Monarch butterflies, and organized their data into presentations and reports. They observed the butterflies’ migration paths, explored how wind and weather affect the journey, and learned about conservation needs on the wintering grounds and at points along the path. In doing so, students gained skills in understanding in science, mathematics, geography, and language arts. In addition, the students grew their own milkweed which they used to attract some of the butterflies, and over a cycle of two monarch generations, they observed all four stages of butterfly development. The students used e-mail facilities in Diane Schroeder’s computer lab to report and communicate with project leaders in Minnesota. (Hubbard, G. *IMAGES of Technology in Texas: Houston ISD. TCET, 1995, pp. 14-15.*)

At Beaumont ISD the upper grades at Homer Drive use CNN Newsroom on the Internet. There are many good math and reading activities which teachers can develop, according to Ms. Rousset. Students become excited about a topic and are in the library constantly, reading everything they can find on the Internet and elsewhere. For example, when the “mad cow” problem hit England, students made multimedia folders (a stack developed with HyperStudio) by combining images from the Internet or from CDs with their own writings accomplished with a word processor. “You learn more with computers,” explains Homer fifth-grader, Nguyen Hang. “You connect with things that are happening” (Spindletop CPDT, p. 3, Homer Drive Elementary, Beaumont ISD).

Poe Elementary School at Houston ISD has and uses direct access to the Internet. As one example of such use, when a student brought in a unique looking dead insect found in South Texas, the

science class made inquiries over the Internet, and within an hour scientists at NASA had sent descriptive information plus several pictures (TCET IMAGES, Houston ISD, 1996, p. 13, Poe Elementary School).

As a result of electronic connectivity, students of Jones Intermediate School have been able to make informative contacts with subject matter experts in many locations. They have communicated with NASA scientists, film makers, writers, and engineers, to mention a few. Many college students at Texas A&M and Prairie View A&M also work with the students. CU-SeeMe (a free videoconference shareware), in addition to e-mail, is being used for some of these contacts (H.T. Jones Intermediate School, p. 8).

An example featuring Pease Elementary School in San Antonio, Texas was provided to the U.S. Congress in the U.S. Department of Education's 1996 national long-range plan for technology. The focus was on problem solving with technology. As seen on page 17 of the national report,

“At Pease Elementary School in San Antonio, Texas, students improved their own lives as they learned how technology could be used to solve real problems. For the Global Laboratory project, students decided to test the air in their own poor smelling classroom. Using primitive air pumps and testing tubes, students were surprised to find elevated carbon dioxide levels in the air. They replicated their experiments in other classrooms with similar results. Since they could not find the cause of the elevated carbon dioxide levels, they decided to seek help on a computer network. An environmental scientist responded to their questions. With his suggestions in hand, the students examined the school's construction and found that the likely cause was poor ventilation. Using word processors and graphics programs, the students developed a presentation of their findings for the school board which, after confirming the readings, repaired the ventilation system. The students then shared what they had learned on the network, which in turn prompted at least one other school to discover elevated carbon dioxide levels in the classroom.”

These are several examples of schools that are teaching and applying the Technology Application TEKS—although the lines are quite blurred as to when teaching the knowledge and skills gives way to applying them in curricular activities.

The Texas Center for Educational Technology will collect information from schools and develop a publication on “What Works in Technology Applications” similar to previous publications called “What Works in Educational Technology” Versions I and II. In addition, TCET will post successful practices on the START Web Site (link from <http://www.tcet.unt.edu/START> or from the TEA Web Site: <http://www.tea.state.tx.us/technology>). Schools are asked to complete the form in Appendix E and share their implementation strategies with others in the state.

INSTRUCTIONAL RESOURCES FOR TEACHERS SUCH AS WORLD WIDE WEB SITES AND SOFTWARE

These resources are available to help teachers teach the Technology Applications TEKS and integrate them into the curriculum. Selected examples are provided in tables in this section.

Dynamic, Electronic Resources

Over 200 teaching Web resources have been coded to align with the Technology Applications TEKS grades K-12. A group of educators, with specialties in both instruction and technology, identified the TEKS resources and have coded them on the START CD-ROM, on the START Web Site, and in print form so that educators may easily locate these web resources. These are to be used as examples for teaching and learning with the Technology Applications TEKS. When accessing these web sites, it is recommended to mark ones that are especially useful by setting a Bookmark for quick reference back to that site.

Table 6-1: Table 6-1 lists a brief descriptor for each of the 3-5 Texas Essential Knowledge and Skills for Technology Applications (see the full text on pages 68-71) . Included in this table are references to sources of web materials and software resources related to the technology applications knowledge and skills and student expectations.

Table 6-2: To make it more usable for teachers who are looking for web site resources, Table 6-2 presents a Web Site Index categorization scheme. Next to each web site entry is a two-letter code for a category type, such as Virtual Visits – VV and Programming – PG.

Table 6-3: This table contains a listing of web sites that have been correlated to the 3-5 Technology Applications TEKS. At the end of each listing is the two-letter code for category type. A complete list of all the Web Sites correlated to technology applications TEKS for grades K-12 is in Appendix A.

Table 6–1 Electronic Resources for the Technology Applications TEKS — Grades 3-5

Foundations	TEKS Brief Descriptor	Resources
126.3 (b)(1)	demonstrates knowledge and use of hardware components, software programs, and their connections	Full web addresses are in Table 6-3 Software (sw) is listed in Table 9-1 www17, www19, www147, www209
(b)(1)(A)	uses technology terminology (task appropriate)	www9, www18, www20, www51, www52, www60
(b)(1)(B)	saves and deletes files, uses menu options and commands; works with more than one software application	www53, www54, www55, www56
(b)(1)(C)	identifies and describes characteristics of digital input, processing, and output	www21
(b)(1)(D)	delineate and make necessary adjustments regarding compatibility issues including, but not limited to, digital file formats and cross platform connectivity	

Foundations	TEKS Brief Descriptor	Resources
(b)(1)(E)	accesses remote equipment on a network such as a printer or other peripherals	www146
(b)(2)	uses data input skills (task appropriate)	
(b)(2)(A)	uses a variety of input devices (mouse, keyboard, disk drive, modem, etc.)	www22, www57
(b)(2)(B)	uses proper keyboarding techniques such as hand and body position and smooth and rhythmic keystroke patterns	www23, www58, www59, www61, www95, www96, sw39
(b)(2)(C)	demonstrates touch keyboarding techniques, (alphabetic, numeric, punctuation, symbols) - age appropriate	www23 sw39
(b)(2)(D)	produces documents at keyboard, proofread, correct errors	www62, www63 sw6, sw24
(b)(2)(E)	uses language skills (capitalization, punctuation, spelling, word division, and use of numbers, symbols) - grade appropriate	www64
(b)(2)(F)	demonstrates appropriate speed on short timed exercises depending on grade level and hours of instruction	sw20, sw23
(b)(3)	complies with laws and issues regarding use of technology in society	www5, www24, www28, www78
(b)(3)(A)	follows acceptable use policies (AUP) when using computer	www25, www26, www28, www65, www66, www68, www97
(b)(3)(B)	models respect of intellectual property - piracy, individual's electronic work	www5, www15, www27, www28

Info. Acquisition	TEKS Brief Descriptor	Resources
(b)(4)	uses a variety of appropriate search strategies to acquire information from electronic resources	www1, www2, www3, www29, www32, sw9
(b)(4)(A)	applies appropriate electronic search strategies (including keyword and Boolean search strategies)	www1, www2, www3, www32, www69, www70, www71, www110, www111, www112, sw17, sw26
(b)(4)(B)	uses appropriate search strategies to navigate and access information on LANs, WANs, Internet, intranet for research and resource sharing	www1, www2, www3, www32, www110, www111, www112, www113, www126, www134
(b)(5)	acquires electronic information in a variety of formats	www152
(b)(5)(A)	acquires electronic information through text, audio, video and graphics	www140, www141, www142, www143, www187, www195, sw9, sw32
(b)(5)(B)	uses on-line help and documentation	www33
(b)(6)	evaluates acquired electronic information	www4
(b)(6)(A)	applies critical analysis to resolve information conflicts and validate information	www4
(b)(6)(B)	determines the success of strategies used to acquire electronic information	www89, www90, www91, www92, www127, www134
(b)(6)(C)	determines usefulness and appropriateness of digital information	www4

Solving problems	TEKS Brief Descriptor	Resources
(b)(7)	uses appropriate computer-based productivity tools to create and modify solutions to problems	www13 sw6, sw36
(b)(7)(A)	uses software with audio, video and graphics to enhance learning experiences	www35, www98 sw37
(b)(7)(B)	uses appropriate software to express ideas and solve problems (WP, graphics, DB, SS, simulations, multimedia)	www72, www99, www101, www102, www103, www104, www105, www106, www107, www108, www109, www114, www115, www122, www143, www174, www213 sw6, sw24, sw34
b)(7)(C)	use a variety of data types including text, graphics, digital audio, and video	
(b)(8)	uses research skills and electronic communication to create new knowledge	www13, www36, www126, www216
(b)(8)(A)	uses communication tools to participate in group projects	www6, www37, www38, www39, www40, www78, www79
(b)(8)(B)	uses interactive technology environments, such as simulations, electronic science or math labs, virtual museum field trips, or online interactive lessons to manipulate information	www6, www73, www74, www75, www76, www77, www117 sw8, sw27, sw29
(b)(8)(C)	participates with electronic communities as a learner, initiator, contributor or mentor	www6, www78, www79, www80, www81, www82, www83, www84, www118, www142, www195, www211, www160
(b)(9)	uses technology applications to facilitate evaluation of work both process and product	
(b)(9)(A)	uses software features, such as on-line help to evaluate work progress	www109
(b)(9)(B)	uses software features, such as slide show previews, to evaluate final product	sw14, sw21

Communication	TEKS Brief Descriptor	Resources
(b)(10)	formats digital information for appropriate and effective communication	
(b)(10)(A)	uses font attributes, color, white space, and graphics to ensure products are appropriate for defined audience	www42, www43, www44, www85, www119, www189 sw35
(b)(10)(B)	uses font attributes, color, white space, and graphics to ensure products are appropriate for the communication media (screen displays, Internet documents, etc.)	www44, www45, www189 sw35
(b)(10)(C)	uses appropriate applications including SS, DB to develop charts and graphs from data	www50, www116, sw36
(b)(11)	delivers product electronically in a variety of media	www8, www46, www178 sw15
(b)(11)(A)	publishes information in a variety of media (printed copy, monitor display, Internet sw15 documents, and video)	www47, www48, www49, www86
(b)(11)(B)	use presentation software to communicate with specific audience	www8, www47, www48, www49, www207
(b)(12)	uses technology to facilitate evaluation of communication, process and product	
(b)(12)(A)	selects representative products to be collected and stored in an electronic evaluation tool	www120, www121
(b)(12)(B)	evaluates product for relevance to the assignment or task	www87, www88, www89, www102, www123, www124
(b)(12)(C)	creates technology assessment tools to monitor progress of project such as checklists, timelines or rubrics	www90, www91, www92, www93, www94, www125 sw15

Table 6-2 WWW Sites Correlated to Technology Applications TEKS

To make it more usable for teachers who are looking for resources in the Web Site Index, a categorization scheme has been included. Next to each Web site entry is a two-letter code for a category type. For example (below), the Web site that allows the user to visit the Smithsonian Museums is in the Virtual Visit (VV) category:

www74 <http://www.si.edu/organiza/start.htm>
 Visit the Smithsonian Museums (VV)

To find others like this, a teacher can scan through the Web Site Index and look for other sites in the VV category. On the START Web Site, the user will be able to conduct a search to pull up all sites in a particular category.

Categories for the Web Site Index

- AT Application Tools (WP, SS, DB, keyboarding)
- AE Assessment /Evaluation tools
- SH Software/Hardware
- RO Reference Tools/Online searching
- II Issues (AUPs, safety)
- WD Designing and creating web sites/html
- GD Glossaries/Dictionaries
- MM Multimedia
- HO Simulations/Higher Order thinking
- TU Tutorials
- PG Programming
- VV Virtual Visits
- OP Projects Online
- RS Resources for teachers/librarians, parents
- HF Human Factors
- MS Miscellaneous

Table 6-3 Web Site Index

www1	http://www.classroom.net/classroom/search.html Search tools which include special search engines for K-12 educators	(RO)
www2	http://search.tenet.edu/ This search engine allows users to search educationally appropriate sites on the www and/or search within the TENET Web Site	(RO)
www3	http://www.yahooligans.com/ Search engine especially for kids that searches selected 'kid friendly' sites	(RO)

www4	http://www.rpi.edu/~basila/casda/eval.html Several sites listing criteria for evaluating Internet sources	(AE)
www5	http://cause-www.colorado.edu/issues/policy.html Current Internet issues include ethical use, fair use, copyright, and more	(II)
www6	http://www.ed.uiuc.edu/Activity-Structures/harris.html Judi Harris' curriculum-based telecomputing projects	(OP)
www8	http://www.kidpub.org/kidpub/ Kids may publish their own work on this site	(WD)
www9	http://www.matisse.net/files/glossary.html A comprehensive glossary of Internet terms	(GD)
www13	http://www.ericir.syr.edu/bib6/bigsix.html Site for strategies for using information resources to solve problems	(HO)
www15	http://www.fau.edu/rinaldi/net/index.html http://www.screen.com/understand/Netiquette.html These sites include Internet user guidelines and proper Netiquette	(II)
www17	http://www2.magma.com/~dsleeth/kids/lessons/lesson1.htm Describes and shows pictures of the parts of a computer as well as what they do	(SH)
www18	http://207.136.90.76/dictionary/index.html 3D computer term dictionary for kids	(GD)
www19	http://www.adita.com/three-b.htm Discusses and defines storage devices	(SH)
www20	http://www.bucknell.edu/~mead/cgi-bin/Glossary.html An interactive matching words glossary	(GD)
www21	http://www.adita.com/three-c.htm Defines and describes printers and other peripherals	(SH)
www22	http://www.adita.com/three-a.htm Defines and describes user input devices such as a keyboard and mouse	(SH)
www23	http://www.dpi.state.nc.us/Curriculum/Computer.skills/lssnplns/keyboarding/grad3221.htm Computer skills keyboarding lesson plan	(AT)
www24	http://199.233.193.1/cybereng/nyt/ethics.htm Discusses technology ethics and intellectual property	(II)
www25	gopher://riceinfo.rice.edu:1170/11/More/Acceptable Links to many Acceptable Use Policy (AUP) examples	(II)
www26	http://www.erehwon.com/k12aup/index.html K-12 Acceptable Use Policies (AUPs)	(II)
www27	http://www.nlc-bnc.ca/ifla/11/copyright.htm Copyright and intellectual property information	(II)
www28	http://www.wentworth.com/classroom/aup.htm Defines and explains how to write your own Acceptable Use Policy (AUP)	(II)
www29	http://ericir.syr.edu/Virtual/Lessons Virtual lesson plans for many subject areas	(RS)
www32	http://www.neat-schoolhouse.org/awesome.html Search engine for finding information by keywords for subject areas, support systems and resources	(RO)

www33	http://kidscom.com/brakc./tobiewan.htm Kids ask questions and they are answered electronically	(RO)
www34	http://www.cyberjacques.com Students search different web sites to help them learn to use the Internet	(RO)
www35	http://www.shareware.com (Under 'Quick search' type in 'elementary' for list of software)	(SH)
www36	http://www.mapquest.com Interactive atlas to find any place in the world	(RO)
www37	http://www.screen.com/start/guide/irc.html Internet Relay chat information	(MM)
www38	http://www.askanexpert.com/askanexpert Kids email questions to experts and they respond with answers	(RO)
www39	http://www.iTools.com/research-it/research-it.html Research tools including language translation, dictionary, etc.	(RO)
www40	http://www.researchpaper.com Writing tips, discussion and chats for kids	(RO)
www42	http://www.htmlgoodies.com Java scripts, html primers and tutorials	(WD)
www43	http://home.sprynet.com/sprynet/gbond/graphics.htm Web page graphics	(WD)
www44	http://junior.apk.net/~jbarta/weblinks/index.html Backgrounds, textures, photos, images, html tools and sounds for web page authoring	(WD)
www45	http://www.netreach.net/icon/index.html Design principles and icons for developing Web sites	(WD)
www46	http://www.nedsite.nl/search/animate.htm Animated gifs for web sites	(WD)
www47	http://www.scar.utoronto.ca/homes/david/htmlcourse/htmlcourse.html Guidelines for publishing multimedia materials on the Internet	(WD)(MM)
www48	http://www.mcli.dist.maricopa.edu/tut/index.html How to create a Web page	(WD)
www49	http://www.yahooligans.com Choose: Computers__Games__and_Online Choose: World_Wide_Web Choose: Web_Page_Design Choose: Web page designer	(WD)
www50	http://seamonkey.ed.asu.edu/emc300/classroom/sprdsheet.html Examples of the uses of spreadsheets	(AT)
www51	http://www.portnet.k12.ny.us/port2000/babble.htm Glossary of Internet Terms (Techno-Babble Explained)	(GD)
www52	http://www.macconnect.com/~jrpotter/puzzles.spml Computer word searches	(GD)
www53	http://www.portnet.k12.ny.us/port2000/disks.htm Care of disks and CD-ROMs	(SH)
www54	http://www.portnet.k12.ny.us/port2000/lesson02.htm Introduction to word processing	(AT)
www55	http://www.portnet.k12.ny.us/port2000/news0016.htm Naming and organizing files	(AT)

www56	http://www.portnet.k12.ny.us/port2000/Backup.htm Backing up data	(AT)
www57	http://www.portnet.k12.ny.us/port2000/lesson01.htm Introducing the computer to the class	(SH)
www58	http://www.portnet.k12.ny.us/port2000/typing.htm How to type correctly and safely	(AT)(HF)
www59	http://cdp.mde.state.mi.us/ITAC/page4.html Elementary keyboarding objectives	(AT)
www60	http://oaktree.dpi.state.nc.us/Curriculum/Computer.skills/Issnplns/Glossary/dbglosry.htm Computer skills curriculum glossary	(GD)
www61	http://www.portnet.k12.ny.us/port2000/setup.htm Setting up a computer with regard to comfort for children	(HF)(SH)
www62	http://www.portnet.k12.ny.us/port2000/wintip01.htm Using keyboard alternatives for common commands in Windows	(AT)
www63	http://www1.zdnet.com/familypc/content/960819/ftsw/paper.html Pointers to help kids write school reports	(RO)
www64	http://www.oplin.lib.oh.us/EDUCATE/SUBJECTS/writing.html Web sources for kid's writing including publishing an online newspaper	(RO)
www65	http://www.rice.edu/armadillo/acceptable.html Acceptable Use Policies (AUP)	(II)
www66	http://www.rice.edu/armadillo/aupenglish.html Example of an Internet and Electronic permission form	(II)
www68	http://www.pitsco.inter.net/p/cite.html How to cite Internet addresses	(RO)
www69	http://www.classroom.net/classroom/searchingfaq.html Hints and tips for searching the Internet	(RO)
www70	http://www.capecod.net/schrockguide/index.htm Recommended Internet sites for teachers	(RS)
www71	http://web.csd.sc.edu/bck2skol/fall/fall.html Lessons for librarians new to the Internet - also very useful for teachers	(RS)
www72	http://www.portnet.k12.ny.us/port2000/choosing.htm Choosing software for the elementary classroom	(SH)
www73	http://www.kaibab.org Grand Canyon National Park Home Page (virtual visit)	(VV)
www74	http://www.si.edu/organiza/start.htm Visit the Smithsonian Museums	(VV)
www75	http://www.education.com Online software store	(SH)
www76	http://www.syrlang.com/D_Kids/Text/langkids.htm Links for animal sounds, sound beginnings and kids around the world	(MM)
www77	http://www.whitehouse.gov/WH/kids/html/home.html Tour of the White House for kids (guided by Socks the cat)	(VV)
www78	http://www.portnet.k12.ny.us/port2000/e_mail.htm Email etiquette	(II)

www79	http://www.webfoot.com/advice/email.top.html A beginner's guide to email	(AT)
www80	http://www.indirect.com/www/dhixson/class.html A tutorial to help with using the Internet, plan interactive projects, and design a class home page	(WD)
www81	http://www.indirect.com/www/dhixson/why.html How and why to join a telecommunication project	(OP)
www82	http://www.indirect.com/www/dhixson/project.html A template for an Internet project design	(OP)
www83	http://seamonkey.ed.asu.edu/~storslee/hp_train.html A guide to writing HyperText Markup Language (HTML)	(WD)
www84	http://www.thejournal.com/past/june/inonline.html Getting started with Online Learning Projects	(OP)
www85	http://www.portnet.k12.ny.us/port2000/dtpbasic.htm Developing a newsletter - goals, budget, design and style	(AT)
www86	http://www.indirect.com/www/dhixson/publish.html Publishing your class homepage on the web	(WD)
www87	http://206.253.197.39/wce/payton.2.htm Choosing software	(SH)
www88	http://www.bus.indiana.edu/isweb/resource/summries/criteria.htm Software evaluation - things to consider	(SH)(AE)
www89	http://economics.semo.edu/kidscomp/Scale.htm Software evaluation form	(AE)(SH)
www90	http://www.learningspace.org/instruct/lessons/pst4.html Multimedia Grading Rubric	(AE)(MM)
www91	http://georgew.gw.pps.pgh.pa.us/rubrics/hprubric.html Scoring rubric for student homepages	(AE)(WD)
www92	http://ed.fnal.gov/linc/spring96/projects_linc3/eaurora/Dieterich/rubric.htm Assessment rubric for computer skills	(AE)
www93	http://athena.wednet.edu/curric/weather/adptcty/assess2.html Group Participation Assessment Rubric	(AE)
www94	http://edap.bgsu.edu/ASPECT/lall.html Constructing checklists	(AE)
www95	http://www.superkids.com/aweb/pages/reviews/typing1/rwtype/merge.shtml Software review of Read, Write and Type, a combination program of reading, writing and typing	(SH)
www96	http://www.superkids.com/aweb/pages/reviews/typing1/sw_sum1.shtml Superkids software review of typing software	(SH)
www97	http://www.hmco.school/links/aup.html Acceptable use policies - examples and legal issues	(II)
www98	http://www.mecc.com Source of software that contains audio, video and graphics	(MM)
www99	http://www.kidsource.com/kidsource/software/tips.html Ten tips to buying children's software	(SH)
www101	http://edu.comspec.net/software Educational software source	(SH)

www102	http://www.superkids.com/aweb/pages/contents.html Educational software review	(SH)
www103	http://www.edu.com Online software store	(SH)
www104	http://www.superkids.com Educational software review	(SH)
www105	http://www.chaco.com/~glenn/jack/ Virtual reality pumpkin making for Halloween	(MM)
www106	http://www.newstimes.com/archive/nov3095/cpg.htm Guidelines for buying children's software	(SH)
www107	http://www.edmark.com/prod/ Educational software including software for students with special needs	(SH)
www108	http://www2.apple.com/disability/shareware.html Disability shareware for the Mac that includes braille fonts, control panel extensions, disability clip art, large print, sign language fonts and talking software	(SH)
www109	http://www.adventure.com/jumpstart_learning_system/ Software that has a progress report feature (toddlers - 4th grade)	(SH)
www110	http://www.capecod.net/schrockguide/mystery/mystery1.htm Directories and search engines explained	(RO)
www111	http://www.capecod.net/schrockguide/searching/sld001.htm Effective search strategies	(RO)
www112	http://ww.etc.bc.ca/tdebhome/searching_faqs.html Learning more about search engines, search strategies, and subject directories.	(RO)
www113	http://www.eduplace.com/techcent/index.html Internet Scavenger Hunt	(RO)
www114	http://eris.manchester.edu/academic_computing/manual/manwp.html Introduction to word processing programs	(AT)
www115	http://klingon.cs.iupui.edu/~aharris/mmcc/mod3/abwp1.html Types of word processing programs	(AT)
www116	http://seamonkey.ed.asu.edu/emc300/classroom/database.html Examples of classroom uses of databases	(AT)
www117	http://fcit.coedu.usf.edu/publications/firnsim/ Simulation provides hands-on experience with Internet connections and practice with Web page creation and video and audio conferencing	(WD)
www118	http://www.mania.apple.com A place for seriously ill and disabled kids on the Internet that includes an e-mail discussion group	(HO)
www119	http://www.mtlake.com Educational software that includes "kid friendly fonts" (commercial but some are free)	(SH)
www120	http://www.peak.org/~labquest/ephome.html Source for a multimedia database for portfolio-based assessment	(AE)(MM)
www121	http://watson2.cs.binghamton.edu/~loland/index.html Electronic Portfolio Assessment Project - information about electronic portfolio use and assessment	(AE)

www122	http://seamonkey.ed.asu.edu/emc300/classroom/word.html Examples of classroom uses of word processing	(AT)
www123	http://microweb.com/pepsite/Revue/evaluation.htm Example of a software evaluation form	(SH)(AE)
www124	http://www.eduplace.com/techcent/staff/reviews.html Directory of children's software and Internet review sites	(SH)
www125	http://edap.bgsu.edu/ASPECT/pll3.html Observation list	(AE)
www126	http://www.techweb.com/encyclopedia/defineterm.cgi Technology encyclopedia	(MM)(GD)
www127	http://www.ocps.k12.fl.us/~intg/bp/search.htm Using search engines effectively/how to evaluate	(RO)
www134	http://manuel.brad.ac.uk/TLTP/Beginner.html How to locate and use information on the Internet	(RO)
www140	http://www.cs.cmu.edu/books.html The Online Books Page	(RO)
www141	http://www.kn.pacbell.com/wired/vidconf/vidconf.html Videoconferencing for learning	(MM)
www142	http://www.gsn.org/cu/index.html The CU-SeeMe Web Site which lists reflectors as well as calendar of events	(MM)
www143	http://fcit.coedu.usf.edu/publications/NewTech/ Interactive technologies is coming back with a web site containing Interactive Videodisc, CD Interactive, Photo CD, CD-ROM and QuickTime	(MM)
www146	http://fcit.coedu.usf.edu/network/overview.htm An overview of networks	(SH)
www147	http://seamonkey.ed.asu.edu/emc300/hardware/hardware.html An overview of the hardware components including input, output, processing and networks	(SH)
www152	http://www.siec.k12.in.us/~west/surfproj.htm Learning how to surf the Internet (in kid's language)	(GD)(RO)
www160	http://www.eduplace.com/techcent/staff/video.html Free software to use for videoconferencing	(SH)
www174	http://stormy.coedu.usf.edu/scripts/fcit/tnt/lp.idc?lesson_id=lp163 Example of integrating databases into the content	(AT)
www178	http://stormy.coedu.usf.edu/scripts/fcit/tnt/lp.idc?lesson_id=lp177 Example of using multimedia including video to develop a presentation	(MM)
www187	http://www.npr.org/ National Public Radio online	(MM)
www189	http://129.120.20.20/graflect/organize.htm Organizing the elements of a web page	(WD)
www190	http://www.bham.wednet.edu/homeswee.htm The tenets of effective web site design	(WD)
www195	http://cu-seeme.cornell.edu CU-SeeMe is a free program that allows you to link your students, by voice and video, to any Internet user or *wired* classroom, worldwide	(MM)

www207	http://www.tcimet.net/mmclass/mudpie For children and teachers to learn how to add music, sound effects and voices to their home pages	(MM)
www209	http://www.sandybay.com/pc-web/graphics_file_format.htm . General software overview including types of software and reviews of software	(SH)
www211	http://www.ipl.org/youth/ref.html Students may ask questions to the library of the Internet Public Library and will be answered via email	(RO)
www213	http://www1.minn.net:80/~schubert/gPlan.html Example plan using spreadsheets and telecommunications in the classroom	(AT)
www215	http://www.pcwebopaedia.com/thetech/ Webopedia - Search by word or browse by category	(RO)(MM)
www216	http://www1.minn.net:80/~schubert/NNplanner.html Template for planning online projects	(OP)

Software Resources

Software resources play a major role in this curriculum area. This section gives some examples of how to select software for use in teaching the Technology Applications TEKS and integrating them throughout the curriculum areas. In addition, *The Educational Software Selector (TESS)*, a software selection tool for Texas educators, is described.

Examples of specific software resources for grades K-12 are listed in Chapter 9. As with the World Wide Web resources described in this START package, the examples are meant to serve as a sampling of resources, rather than a comprehensive listing. Published evaluations are available from sources such as the International Society for Technology in Education and Educational Products Information Exchange (EPIE) Institute (see Bibliography).

A software selection tool is available to Texas educators. *The Educational Software Selector (TESS)* produced by Educational Products Information Exchange (EPIE) Institute, provided on the START CD-ROM, is a good tool for selecting appropriate software. The database contains over 17,000 software descriptions from over 1000 publishers. It can be used to select software for 3-5 students and for educators.

Especially important as a software resource in Texas are the Education Service Center Preview Centers and Training Programs. ESC technology preview centers provide district personnel hands-on experience with exemplary instructional software, hardware, and other technologies.

Another valuable resource is the Department of Information Resources - Software Department. This agency provides special purchasing options for schools including low prices for many of the most popular software packages. For more information, call DIR at 1-800-464-1215.

CURRENT PRINT AND MEDIA RESOURCES, INCLUDING RESEARCH, BEST PRACTICES, AND INSTRUCTIONAL SOURCES

Resources in this section of the Technology Applications (TA) TEKS *Companion* contain examples of print and media resources which will hopefully assist educators in implementing the TA TEKS, grades 3-5. It is recommended that 3-5 educators visit their library to find additional resources. In addition, the Texas Library Connection (TLC) is a valuable resource for finding print and media resources. Visit the TLC Web Site at <http://www.tea.state.tx.us/technology/tlc> and do a search. Numerous resources have been developed and are available for Texas educators. The following are merely a brief selection, included here to give a sampling of the many resources that are available.

Beaver, J. F. (1994). *Problem Solving Across the Curriculum-Improving Students' Problem-Solving Skills Using Off-Computer & On-Computer Activities*. ISTE. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Chambers, E. (1997). *The Kid-Friendly Computer Book*. Monday Morning Books, Inc. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Computer Learning Foundation (1988). *Computer Learning Foundation Lesson Plan Books: Edition I*. Computer Learning Foundation. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Computer Learning Foundation (1989). *Computer Learning Foundation Lesson Plan Books: Learning Together*. Computer Learning Foundation. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Computer Learning Foundation (1990, 1995). *Computer Learning Foundation Lesson Plan Books: Integrating Technology Into the Curriculum*. Computer Learning Foundation. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Council on Keying Education. (1993). *Keyboarding Toolbox-Teaching Methods for Keyboarding Technique, Accuracy, and Speed*. ISTE. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Frazier, D., Kurshan, B., & Armstrong, S. (1996). *Internet for Kids, Second Edition*. SYBEX, Inc. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Handler, M., Dana, A., & Peters, M. J. (1995). *Hypermedia as a Student Tool-A Guide for Teachers*. Libraries Unlimited, Inc. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Hofmeister, J. F., & Rudowski, J. B. (1997). *HyperStudio Garden-101 Things to Grow*. Thomson Learning TOOLS. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Marshall, G. (1995). *Travelers Through Time and Space—Multicultural Activities for the Computer Classroom*. ISTE. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Muir, M. (1997). *But How Do I Use HyperStudio With Kids? Designing and Doing Curriculum-Based Projects*. ISTE. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Offutt, E. R. (1996). *Internet Without Fear! : Practical Tips and Activities for the Elementary Classroom*. Good Apple.

Riedl, J. (1995). *The Integrated Technology Classroom—Building Self-Reliant Learners*. Allyn & Bacon. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Ryba, K., & Anderson, B. (1990, 1993). *Learning With Computers—Effective Teaching Strategies*. ISTE. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

Willing, K. R., & Girard, S. (1990). *Learning Together—Computer-Integrated Classrooms*. Pembroke Publishers, Ltd. (Available through the International Society for Technology in Education, 1-800-336-5191, www.iste.org)

SUMMARY

The technology applications curriculum is new to many educators in Texas especially at the 3-5 level. This START package was specifically designed to assist with the implementation of this comprehensive K-12 curriculum and give teachers a START. We hope that these resources are helpful as educators dialogue with peers, prepare instructional lessons, and watch students learn about technology tools and their application in all types of daily activities. In addition, we hope that schools, ESCs, CPDTs, and CEDs share with TCET “What Works” in the classroom, school, district, and region. TCET’s hope is that the *Companion*, START CD-ROM, and START Web Site will be use often as your knowledge and expertise grows in this area. The START Web Site will be updated regularly. As a part of the START project, a form has been provided in Appendix E for schools, ESCs, CPDTs, CEDs, and others to share how they are implementing this technology applications curriculum.

The print, electronic, and web examples of resources provided in this section are not intended to be inclusive. Rather, they are offered as ideas and networking contacts to get educators started with the Technology Applications TEKS and this curriculum. Again, it is recommended that 3-5 educators refer to Chapter 9 for additional resources that are appropriate for this grade cluster and all others. We hope these resources and ideas will be a good place to START!