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I am submitting herewith a dissertation written by Nancy Sue Phillips Knox entitled "COMPARISON ANALYSIS OF GRADE LEVEL IMPLEMENTATION OF PUBLISHED KEYBOARDING SKILLS BASED ON INTERNATIONAL SOCIETY FOR TECHNOLOGY IN EDUCATION (ISTE) STANDARDS AND STATES IN THE SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS (SACS)." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Education.

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**COMPARISON ANALYSIS OF GRADE LEVEL
IMPLEMENTATION OF PUBLISHED KEYBOARDING SKILLS
BASED ON INTERNATIONAL SOCIETY FOR TECHNOLOGY IN
EDUCATION (ISTE) STANDARDS AND STATES IN THE
SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
(SACS)**

**A Dissertation
Presented for the
Doctor of Education Degree
The University of Tennessee, Knoxville**

**Nancy Sue Phillips Knox
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DEDICATION

To my Mother,
Kay Francis Smith Phillips,
her love never stops, and for that, I am forever grateful.

To my Zachary Phillip Knox, you are my star.

Timothy Eugene Knox, thank you for your love, support and encouragement.

Thank you to my “best boy” – “*When I first met her, I knew in a moment I would have to spend the next few days re-arranging my mind so there’d be room for her to stay*”

– Brian Andreas

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And, with permission from the author, to acknowledge a quote that keeps me grounded: *“is willing to accept that she creates her own reality except for some of the parts where she can't help but wonder what the hell she was thinking”* – Brian Andreas

ABSTRACT

The purpose of this study was to examine the correlation of grade level implementation of published keyboarding skills based on International Society for Technology in Education (ISTE) national standards and individual states governed by the Southern Association of Colleges and Schools (SACS). The Internet served as the medium for collecting the published data.

Accessing the official state websites and comparing standards, curriculum guidelines, competency profiles, benchmarks, and/or frameworks from each state governed by the Southern Association of Colleges and Schools (SACS) accomplished this correlation. The states governed by SACS and were included in this study are: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. After assessing the individual state standards, those standards were compared to the International Society of Technology in Education (ISTE) national standards. These comparisons were done during the spring of 2003.

This current study provided significant information by pointing out that students are learning technology skills at a much younger age and retaining that information to use throughout their educational endeavors. This is a significant contribution or finding in lieu of the fact that curriculum guidelines need to keep up with current technological advances and learning curves of today's students. It was found that for the general consensus of this study, grade level implementation of published keyboarding skills based on the comparison of the International Society for Technology in Education (ISTE) standards and the states governed by the Southern Association of Colleges and Schools

(SACS), was that keyboarding is being introduced in middle school level standards. It was also found after the comparison that Tennessee was the only state not offering introductory keyboarding or touch-typing at elementary and middle school grade levels.

This study has implications for administrators, educators, and instructional designers involved with collaborating skill development with curriculum incorporation and implementation to revisit when their systems offer instructional keyboarding skills.

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CHAPTER 1

INTRODUCTION TO THE STUDY

Introduction

The use of the computer and instructional technologies for education and training is rapidly increasing. Much emphasis has been placed on the technological advancements of educational instructional mediums. In acknowledging this emphasis, the determination of when to introduce technology to the public education school system students becomes relevant. Many states, including the State of Tennessee, are in the process of initiating or have already initiated plans for bringing technology into the K-12 classroom. In the State of Tennessee's planned curriculum for each grade level, there are specific goals for each grade level. This research will focus on published state curriculum guidelines for introducing technology into the curricula, and in particular, the introduction of keyboarding skills. Competency profiles are already in place for the State of Tennessee in regard to the Introduction of Keyboarding in the public educational school systems. These profiles target the ninth grade population in Tennessee.

From the importance placed on technology from Former President Bill Clinton and his administration's unprecedented commitment to bring technology into the classroom to state-by-state realization that it must be included as an important part of the curriculum, technology has the potential to be one of the most important teaching tools of all time. When technology is used as a computer-based instructional tool, it supports the academic endeavors of the teacher and serves as a communications tool to and for the student. The educational use of technology moves the student from a passive role of

recipient of information transmitted by a teacher from a textbook or some other medium to an active participant in the educational process. From some observations, peer-to-peer learning seems to increase when technology is included in the curriculum.

On January 8, 2002, President George Bush, in an effort to make sure that no child is left behind, signed into law The No Child Left Behind Act of 2001. The goal of No Child Left Behind (NCLB) is to create the best educational opportunities for our nation's children and to ensure that they have every opportunity to succeed (NCLB, 2001). With this new Act, several opportunities for using technology in the classroom become available.

The very backbone of computer use and information entry or reception is the keyboard or, to a much lesser degree, as with the Macintosh or Windows based Personal Computer, the mouse. With the knowledge that technology and computers are becoming an important tool for all aspects of our society, should the education system not prepare our children at an early age with proper keyboarding techniques that will follow them through their school years where computer usage will be considered a must instead of an accessory or commodity? With the emphasis placed on computers for the future, should the educational system not provide our children with the best possible skills to succeed in the future with one of those essential skills being the proper techniques of keyboarding? In printed literature, statements have been made that indicate the keying process or skill is considered a necessary life skill instead of being considered an elective class for students to take to complete a schedule or curriculum.

Computers are found in almost every classroom beginning with the kindergarten environment. The educational system should start to properly educating these children on the use of such tools from the beginning of their educational endeavor instead of waiting to “un-train” them after their having learned improper skills such as the “hunt and peck” method of keyboarding.

The objective of this study is to evaluate the curriculum standards of the eleven member states of the Southern Association of Colleges and Schools (SACS) and to assess the eleven individual state standards based on the International Society for Technology in Education (ISTE) national standards. By comparing these states and their curriculum guidelines of instructional methods, maybe educators can begin to realize the importance of keyboarding skills and their relevance to age-appropriate instruction. The eleven states governed by SACS are: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

The Purpose

This study is being undertaken to determine, through a review and assessment of the standards for the eleven states governed by SACS, at what age level or grade level keyboarding is being introduced in the public school systems. The study will identify the factors that contribute to students’ learning keyboarding skills and what age level or grade level each state considers to be the most appropriate to begin keyboarding instruction. Also, another problem of concern is how the SACS-governed schools and competency profiles compare to the ISTE national standards for implementing keyboarding or technology into the public school system.

Another purpose of this study will be to compare different state curriculum guide sheets to determine what each state considers to be the optimal age level or grade level to begin instructional learning classes of keyboarding. This study will be an agent to support the idea that introducing students to proper keyboarding skills early in the child's curriculum is an advantage.

The Problem

Many studies related to this topic have been done in the past to try to weigh the merits of age-appropriate instruction. Just as the old Apple II computer, a great machine of its time, went by the wayside, research of no more than four years ago would similarly appear to be archaic in many of its conclusions because of the improvements in software and hardware related to the current problems. These studies, though, are just as applicable in today's technological situation as when they were first undertaken. Even though they may be considered archaic, we are just realizing these studies are still considered "cutting edge" or leading the way with issues that continue to be unresolved in many states.

In a follow-up comparison of the report, A Nation At Risk, information was taken from the report that was written in 1983 and compared to 1998 to see if any of the general findings had been corrected, changed, or improved (The Center for Education Reform, 2003). The comparison stated that previously business and military leaders complained because of having to offer remedial courses to employees because they were lacking in basic skills. In the 1998 report, it was stated that 40% of all 17-year-olds did not have the math skills and 60% lacked the reading skills to hold down a production job at a manufacturing company (Center for Education Reform, 2003). Using this as an

example, should we not investigate when to offer a fundamental skill necessary to the effective use of technology, such as the skill of proper keyboarding in our school curriculums? Many studies have indicated that this skill is considered a necessity now instead of an elective?

Software designed and written specifically for the early elementary school age group should most certainly have an impact on a study based on these problems. A variety of keyboards designed especially for this age group that address hand size and reading ability should alter the results of previous studies if repeated.

With this comparison analysis, the main goal is to determine what each state considers to be the appropriate age level or grade level to introduce keyboarding into the states governed by SACS and to see how these states compare to ISTE national standards.

Previous Research

The review of literature focused on a few key ideas or areas from the questions posed throughout this research. What effects, if any, will the introduction of keyboarding have on different age or class level instructional learning systems? What effects will this comparison have on the instruction of keyboarding skills for elementary school aged children? Will there be a measurable amount of retention at such an early age for learning modality and intellectual skills that include the concept of keyboarding? Will age be a significant determinant in offering keyboarding instruction to elementary children? What will be the best way to provide instruction of keyboarding to elementary aged school children?

The goal of this research is to compare the keyboarding curriculum guidelines for the eleven states governed by SACS. The eleven states governed by SACS are: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. Instructional technological advances are becoming more prevalent in educational learning settings. With these new technological advances, instructional tools for presenting or delivering educational learning materials in new formats are becoming increasingly resourceful ways to share information. These new formats include interactivity for the user.

For the purpose of this research, several articles were reviewed for relevancy and validity information regarding this study. Below are listed several synopses of articles reviewed for this research study.

In a study conducted by Barta (1989), it was concluded that teacher-based instruction is more effective; computer-based instruction for learning with students who had the self-discipline to stay on task was acceptable. This study found that age is not a determining factor in keyboarding achievement. In the results from the same study, the conclusion was found to acknowledge that both teacher-directed and self-instructed means of learning result in useable keyboarding skills and stated that self-directed students will require teacher assistance in the process.

Cowles (1983) indicated in her research that elementary children can learn keyboarding skills (Cowles, 1983). Her study also investigated the relationship between keyboarding achievement and modality skills. The study measured attitudes in conjunction with success of keyboarding skills and found that there are no added levels of frustration to these children. The children in the study had no difficulties with staying on

the task. Cowles acknowledged that reading ability is an important prior skill. Further, information from this study stated that gross and fine motor proficiency are interrelated to the achievement level of the older children.

Finken's study revealed that there is no relationship between the age of her students and their prior experience, if any, with keyboarding skills (Finken & Babcock, 1996). This study did include participants with a broad base in age. This research found that the problems occurred due to the amount of new information given and not prior skills.

A study performed by Frazer (1993) noted that community involvement and support played an important part of positive reinforcement to the students. When those students were able to access computers after school hours and were able to take the machines home with them, the students became active participants over their environmental surroundings.

The affects of computer-assisted instruction on achievement, problem-solving skills, computer skills and attitude were measured in a study done by Gilman (Gilman & Brantley, 1988). This study measured student attitudes toward school and computers. The experimental group showed higher levels of achievement on computer skills test.

Hatfield (1996) completed a research study examining the effective use of computer stations across the curriculum. This study wanted to examine how to transfer computer usage to all areas of the curriculum and expand it out of the computer stations concept.

Keyboarding issues in elementary education was the focus of a study conducted by Kercher (1985). Students developed positive attitudes toward keyboarding and

learned the skills of formal keyboarding. It was also determined that improvements were found in language arts achievement skills (Kercher & McClurg, 1985).

According to a study done by Peters (1996), collaborative environment is formed when students use the keyboard as a tool to access the Internet. The students benefited from exploring the Internet and by utilizing and including other resources of the computer (Peters, 1996).

Sormunen discovered during her research (1993) that keyboarding speed is affected by the student's natural kinesthetic ability. Wiggs (1995) found in her research that students perceived working individually benefits them. Her study revealed that age, prior computer and keyboard experience are not significant indicators of success (Wiggs & Huter, 1995). This reinforces the previous study by Barta (1989) that also indicated age was not a determining factor in keyboard achievement.

From reviews of previous research summarized above, it was found that age seems to be a small indicator, not a major predictor of when to begin keyboarding instruction. From these studies, it seems that the earlier the child is taught keyboarding skills, the better the chance the child will have to develop other skills, such as intellectual or critical thinking skills. Some studies suggest that keyboarding skills help children compose better at the computer, thus developing a link between success and achievement in later grade work.

Importance/Need of the Study

This study has the potential to suggest changes in curriculum guidelines for the eleven states governed by SACS in relationship to the introduction of keyboarding in the

public educational school system. This current study may, in addition, prove significant by pointing out that students are learning technology skills at a much younger age and retaining that information to use throughout their educational endeavors. This is a significant contribution in lieu of the fact that curriculum guidelines need to keep up with current technological advances and learning curves of today's students.

Assumptions

The following assumption applies to this study:

Curriculum guidelines, frameworks, benchmarks, standards, or competency profiles gathered from Internet websites created by each individual state and written material gathered from those states are the most accurate and up to date from each state used in the comparison analysis. The material harvested from these state websites can be found in Appendix B. A collection of web addresses used in this review can also be found in Appendix A.

Limitations

The following limitation applies to this study:

The principal researcher is also the person gathering the data, thus, may bias the study despite attempts to thwart such bias.

Delimitations

The following delimitation applies to this study:

The eleven states governed by SACS are: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia.

Definition of Terms

Competency profiles, benchmarks, frameworks, guidelines, and/or standards: a set of measurable instructions or goals that measure a level of educational achievement and/or define acceptable and/or desirable levels of student performance for the educational system. These are the expected norms or instruments used for defining professional and public expectations in regard to curricular and instructional effectiveness.

Key: to input data or text using a computer, word processor, or typewriter.

Keyboard: (1) A set of keys, as on a computer terminal, word processor, or typewriter (American Heritage Dictionary, 2000).

Keyboarding: (2) To physically enter (text or data) by means of a keyboard, typewriter, or computer terminal (American Heritage Dictionary, 2000).

Question

Based on a comparison of published standards of ISTE and SACS-governed states for keyboarding instruction, what are the relationships (a) among states, and (b) between each state and ISTE with emphasis on grade-level implementation?

Methods and Procedures

The material gathered from the comparison analysis will provide the conceptual framework for the study and will be the guide for the design and layout of the analysis of the data.

The participants in the study will be the eleven states governed by SACS. Material will be gathered from their on-line Internet websites and material requested and mailed to the principal investigator of this study if the material cannot be gleaned from the Internet. To answer the research question, a variety of methods will be used: website data, factual paper-format information, comparison analysis and the creation of chart structures or coding instruments will be used to identify the comparison. Once the data is analyzed, themes will be identified and shared with all members of the study.

The material will be gathered from the eleven states governed by SACS. A variety of methods will be used in this research project to compare the material gathered. To answer the research question, “Based on a comparison of published standards of ISTE and SACS-governed states for keyboarding instruction, what are the relationships (a) among states, and (b) between each state and ISTE with emphasis on grade-level implementation? ” a coding instrument will be prepared. A panel of keyboarding instructors from local high schools will review the coding instrument for validity. Using the coding instrument, a review will be done on each state curriculum guide, and the information from those guides will be transferred to the coding instrument to chart similarities and differences. From reviewing the completed coding instrument, one will be able to surmise the optimal age level or grade level to begin keyboarding instruction in public education school systems, or at what age level or grade level these states begin

offering keyboarding instruction for their students. After reviewing this coding instrument, the question, “Based on a comparison of published standards of ISTE and SACS-governed states for keyboarding instruction, what are the relationships (a) among states, and (b) between each state and ISTE with emphasis on grade level implementation?” can be answered by comparing the results.

Organization of the Study

This study will be organized in five chapters. Chapter One will introduce the problem, state the problem and purpose of the study, define necessary terms, include previous research information, and will include the importance and need for the study. Chapter One will also include a synopsis of methods and procedures used to answer the questions stated and will contain assumptions, limitations, delimitations and definitions. Chapter Two will provide the reader with a review of literature that is directly related to the states governed by SACS and their curriculum frameworks or competency profiles that are currently being used by those states in their instruction of keyboarding skills in their public educational school systems. This is the information that will be collected from the Internet. ISTE and SACS information will also be provided in this chapter. Chapter Three will include details relating to the methodology used to answer the research question. Also in Chapter Three there will be a detailed description of methods and procedures used to gather the respective data that will also include the design of the study, the question that will be used to guide the study, and the methods used to analyze the data. A Methodology Conceptual Frameworks diagram will be included in the chapter for reference. Chapter Four will provide the results of the data as well as the

results in relationship to the states governed by SACS and how those states compare to ISTE national standards for the introduction of keyboarding skills into the public school curriculums for those states. Conclusions, discussions and recommendations for further research will be included in Chapter Five.

Time Schedule

The research will be broken down into three time periods:

1. Designing the study – time frame – Spring 2001 – March 2003
2. Collecting the data – time frame – Spring 2001 – March 2003
3. Analyzing the data and writing the final report – April/July 2003

Summary

The first chapter in this comparison analysis presented the rationale, need and the potential to suggest changes in curriculum guidelines for the State of Tennessee in relationship to the introduction of keyboarding in the public educational system. This current study, in addition, provided significant information by pointing out that students are learning technology skills at a much younger age and retaining that information to use throughout their educational endeavors. This is a significant contribution or finding in lieu of the fact that curriculum guidelines need to keep up with current technological advances and learning curves of today's students. This chapter also included limitations, delimitations, and the research question posed for the comparison analysis.

CHAPTER 2

REVIEW OF LITERATURE

Motivation

This chapter offers a review of the literature that was used to answer the question, “Based on a comparison of published standards of ISTE and SACS-governed states for keyboarding instruction, what are the relationships (a) among states, and (b) between each state and ISTE with emphasis on grade level implementation?” This review encompasses the ISTE published standards and the SACS-governed state standards that have been published on the individual state department of education websites. This research includes a coding instrument that examines the standards between each state governed by SACS. After the coding instrument is created that examines the standards between states, another coding instrument will be created to analyze the commonalities and differences of each state and how they relate to the ISTE national standards. One of the biggest motivators for this research can be summed up in the following quote: “In poll after poll, parents say technology is essential to a child’s education” (Technology Counts, 1997).

National Standards for Business Education (NBEA)

For reference, to be able to teach keyboarding in the State of Tennessee public school system, one has to be certified with the business endorsement code 432. Due to the fact that teachers of keyboarding in this state are certified in Business Education, it seemed important to research the National Business Education Association Standards to

ascertain how their standards relate to ISTE NETS keyboarding standards. The National Business Education Association (NBEA) is this country's largest association dedicated to those involved with instruction, administration, research, and dissemination of information for and about business. This organization recognizes the necessity for competencies in business education. NBEA is aware of the accelerated pace technology has created in the business world and in individual lives. "Because all students will use technology as a tool for managing information, all students need to hone the lifelong learning skills that foster flexible career paths and confidence in adapting to a workplace that demands constant retooling" (NBEA, 2001). In reviewing the NBEA standards, NBEA has Level 1, 2, 3, and 4 to distinguish the different grade classifications. Level 1 is for Elementary School (grades K-6), Level 2 Middle/Junior High School (grades 6-9), Level 3 Secondary School (grades 9-12) and Level 4 Two-Year Postsecondary/Community College or Technical College (NBEA, pp. xi and xii). Included in the National Business Education Association's National Standards for Business Education is a listing that states:

"VI. Input Technologies and its Achievement Standard: Use input technologies appropriately to enter and manipulate text and data.

Level 1 Performance Expectations

- Develop proper input techniques (e.g., keyboarding, scanning, speech recognition, handwriting recognition, and the use of a touch screen or mouse), including safety methods to avoid repetitive strain injury

- Enter and manipulate numeric data using the touch method on a 10-key keypad
- Identify, compare, and explain features of various keyboards
- Use a variety of input technologies
- Enunciate and read clearly using speech recognition technologies

Level 2-4 Performance Expectations

- Develop input technology skills for acceptable speed and accuracy levels that adhere to principles of repetitive strain avoidance
- Compose original documents using speech recognition and other input technologies
- Describe the safe and appropriate use of input tools and techniques”
(NBEA, 2001).

Major Risks

From the report A Nation at Risk, several statements have been made that confirm that our technology standards are below par. The following quote illustrates how our students are lacking in technological skills:

“These deficiencies come at a time when the demand for highly skilled workers in new fields is accelerating rapidly.

For example:

- Computers and computer-controlled equipment are penetrating every aspect of our lives--homes, factories, and offices.
- One estimate indicates that by the turn of the century millions of jobs will involve laser technology and robotics.
- Technology is radically transforming a host of other occupations. They include health care, medical science, energy production, food processing, construction, and the building, repair, and maintenance of sophisticated scientific, educational, military, and industrial equipment” (National Commission on Excellence in Education, 1983).

The deficiencies that this quote is referring to relate to a list of thirteen items deemed Indicators of Risk. Some of those Indicators of Risk are: not developing higher-order thinking skills and that business and military agencies are complaining because they are having to offer remedial education programs and training before skills can actually be used.

As stated in the Recommendation section of A Nation at Risk, Implementation Recommendation Item 3 states: “The teaching of *computer science* in high school should equip graduates to: (a) understand the computer as an information, computation, and communication device; (b) use the computer in the study of the other Basics and for personal and work-related purposes; and (c) understand the world of computers,

electronics, and related technologies” (National Commission on Excellence in Education, 1983).

Students are being given work assignments that require keyboarding skills in their academic classes and the teachers are expecting the students to be able to complete the assignments without proper skills. For instance, asking an English student in the eighth grade to submit a research paper that has been keyed in manuscript format, but the same school system not offering proper keyboarding skills until the ninth grade. By the time the students are enrolled in such skill-developing courses, the students have undoubtedly learned how to “key” incorrectly and have by that time developed a keying process that is difficult to overcome. Some might refer to this incorrect method as the “hunt and peck” method of keying data into the computer.

When Should Keyboarding Skills Be Introduced?

Traditionally, touch-typing or keyboarding has been taught at the high school level to students who had not had formal keyboarding or touch-typing instruction. With computers now being found in almost all classrooms and students having access to computers outside the classroom, students at very young ages are being exposed to the computer and accessing it as a tool and toy. Kidney (1985) stated in his study that students would spend more than 400 hours using computers before they reached the ninth grade. Several research studies have been done to investigate grade implementation or skill-level appropriateness. Computers are found in almost every elementary school

classroom. Some teachers have a computer for students to use as a reward for completion of class assignments. Other teachers use computer games as another method of reward for work well done. How are students inputting or accessing these computers? Hoot (1986) indicated in his study that the main or primary device for inputting is through the use of the keyboard. Today, mouse and touch screen or touch pads have been added as input devices, but the keyboard is still the number one input device.

Concern has been expressed over the appropriate grade or age to introduce keyboarding because of developmental issues. In research done by Hilsenbeck (1990), it was stated, "Students' handwriting has been established by the end of fourth grade." Other issues or risks involved in introducing keyboarding in elementary grades deal with preparation of the classroom teacher to instruct proper keyboarding skills. Elementary teachers are not sure how to begin introducing keyboarding in their classrooms. One of the major issues of the keyboarding debate has been addressed in a study conducted under the sponsorship of the Texas Education Agency. Boudrot (1987) stated that the goal of keyboarding instruction was to enable students to make the most of the computer keyboard more competently and to avoid re-teaching when students have cultured or exhibited improper keyboarding techniques or habits. Boudrot's study (1987) even had recommendations for gross words per minute (GWM) with a range between 10 GWM to 20 GWM, depending on the grade level, regularity of instruction, and length of the instructional period.

Recognition by business educators has long stressed that instruction in keyboarding or touch-typing should be implemented before students become involved in

activities that require extensive keyboarding. For example, when students are asked to submit typewritten documents for research projects in science classes, it becomes a necessity that students be able to key documents instead of responding with one finger keystrokes, such as answering Y or N to yes or no questions while using the computer. Frustration appears in students who use the “hunt and peck” method to key because they lose focus and creative thoughts when they become overwhelmed with the mechanical issues of creating a typed paper and they do not have the skills needed for keying proficiency that would allow them to focus on the content instead of the mechanics. The bad habits of the “hunt and peck” method become an ingrained method of keyboarding or data entry that makes it difficult for a student to learn or develop correct keyboarding techniques and proficiency in touch-typing or keyboarding when they do enroll in their first formal keyboarding instructional class. The research of literature for this project indicates that keyboarding is a necessary skill in this age of rapidly developing technological advances.

There seems to be a disagreement when addressing the best method of instruction for implementing keyboarding in the elementary classrooms. Traditional touch-typing and general keyboard familiarization are the two most favored styles of keyboarding in the readings by this primary investigator. The method of touch-typing is the most widely known method for introducing keyboarding or typing in the high school classroom settings. This method expounds on the instructor giving repetitive instructions for keying as the students listen and key. For instance, the teacher saying to key or strike letters with designated fingers the following repetitive sequence of keys, “a, s, d, f, ;, l, k, j” and

repeating the home row instruction as the students practice over and over until they have memorized the letter/finger relationship. Touch-typing necessitates the placement of assigned fingers to certain keys on the keyboard, known as the home row. The method of keyboard familiarization is a series of activities on the keyboard in which students are encouraged to use both hands as they memorize the location of the keys and no longer have to hunt and peck for the key and key it with one finger. Case in point, using a software program for keyboarding instruction like Mavis Beacon Teaches Typing, students are guided through computer-generated lessons or activities to help them learn to key. Mavis Beacon Teaches Typing Teacher's Guide states, "Learning to type is more like learning a sport than learning an academic subject. Typing has more to do with your muscles than with your mind" (Beacon, 1987).

Schmohe (1990) stated that conversations with elementary school teachers that have been included in programs that instructed correct keyboarding skills and techniques led to the following conclusion:

Once the correct skill is learned, students in subsequent months and grades are able to accomplish more than those students who did not have proper keyboarding instruction. Just because it takes time initially to learn the keyboard does not mean that the time is not well spent".

Fidanque (1990) reviewed a school system that offered keyboarding skills to students in third through fifth grades. Students often access the computer before formal keyboarding instruction has been implemented. By reinforcing good keyboarding habits and techniques from the introductory period throughout

the entire instruction timeframe, Fidaque's school system helped avoid incorrect keyboarding techniques in the early grades.

In reviewing literature for this research project, many articles repeatedly acknowledged similar statements exemplified by the following quote:

“Limited or no keyboarding skills may diminish a student's ability to operate a computer. It is not the intent of this document to advocate the teaching of keyboard utilization concepts in a formal keyboarding course. However, the keyboard is an important and efficient tool for inputting information into the computer.

Although exceptions exist, the suggested age for effective keyboard instruction is 10-12 years of age (Elementary/Middle School Keyboarding Strategies Guide, 1992). Keyboarding is a kinesthetic skill acquired through systematic, repetitive instruction in touch-typing. To appropriately instruct students in keying skills, it is recommended that students be taught by a teacher who has knowledge of proper keyboarding techniques rather than solely relying on a software program for skill development. Repetitive drill and practice exercises are necessary for successful instruction. Sporadic access to a computer does not develop the needed level of skill for the student. Levels of keyboard utilization are included in each grade cluster of this document. Local school systems are

encouraged to plan, design, and implement a scope and sequence plan for appropriate skill development” (Alabama Course of Study, 2003).

How Long Must Instruction Be?

In reviewing studies for this research, the “how long” of keyboarding instruction in the elementary classroom varied, but the recommendations all conformed to the elementary school schedule. Most studies reviewed listed consistency of keyboarding instruction with a combination of teacher instruction and use of a software keyboarding instructional package such as Mavis Beacon Teaches Typing or MicroType Pro. The time frames listed in the studies almost all agreed that the keying time should be at least 30 minutes a day with at least a three day instruction period per week for an extended timeframe of four to six weeks (Boudrot, 1987, Suhor, 1987, and Jackson, 1991).

Southern Association of Colleges and Schools (SACS)

The best way to describe the Southern Association of Colleges and Schools, which was established in 1895, is to quote SACS itself: “The Southern Association of Colleges and Schools (SACS) accredits more than 12, 000 public and private educational institutions, from prekindergarten through university level, in eleven states of the Southeastern United States and in Latin America. Member institutions regularly perform comprehensive self-evaluations to assist

them in planning for improvement and to assure the public of their overall quality. SACS is one of only six such regional accrediting organizations in the U.S. recognized by the U.S. Department of Education. Member institutions are accredited through one of SACS' three commissions, the Commission on Colleges, the Commission on Secondary and Middle Schools, and the Commission on Elementary and Middle Schools" (SACS, 2003).

Since this research is dealing with secondary and middle schools, data gathered for this project were harvested from the Commission on Secondary and Middle Schools. Since 2000, the Commission has been working to develop a set of standards for accreditation. A team of experts gleaned from the eleven-state region was responsible for putting together a set of quality standards. The commission designed a set of standards that has a common thread of expectations that will pair quality schools with accreditation from SACS. January 1, 2005 is the next target date for a revision of accreditation standards. For this research, two documents were retrieved from the Commission on Secondary and Middle Schools for reference and common standards. Those documents are: Accreditation Standards 2000 and Standards Checklist for Vocational-Technical Institutions (Commission on Secondary and Middle Schools, 2000 and 2001). SACS does not list specific standards for keyboarding instruction or at what age or grade level to implement formal keyboarding instruction into the public school system. The main focus for the inclusion of SACS is their associated reference for the eleven states and how they were chosen for this study.

International Society for Technology in Education (ISTE)

The International Society for Technology in Education (ISTE) is a worldwide professional organization whose primary goal is to improve teaching by advancing effective technology in K-12 education as well as higher education levels. ISTE houses the National Educational Technology Standards (NETS) (ISTE, 2003). “The primary goal of the ISTE National Educational Technology Standards (NETS) project is to enable stakeholders in PreK-12 education to develop national standards for the educational uses of technology that will facilitate school improvement in the United States. The NETS Project will develop standards to guide educational leaders in recognizing and addressing the essential conditions for effective use of technology to support PreK-12 education” (ISTE, 2003).

NETS has several documents that are under development or being refined at the current time. These documents are part of the ISTE documents that are found in Appendix C. The two documents used in the research of this comparison analysis will be from the Technology Foundation Standards for All Students - National Educational Technology Standards for Students (NETS) and Profiles for Technology-Literate Students: Grades PK-2, Grades 3-5, Grades 6-8, Grades 9-12 (ISTE, 2003).

Accountability

In Jackson’s study (1991), it was stated that several states have plans to require keyboarding as part of the elementary curriculum. Standards, curriculum guide sheets,

competency profiles, frameworks, benchmarks or whatever terminology is used to have standardized rubric assessment or accountability should be in place for each state. In reviewing the SACS-governed state websites, all of the states had some type of standardized accountability for keyboarding. The following quote appears in National Standards in American Education:

Recognizing that prescribing more years of study was good but not *sufficient*, education and political leaders began to think more about the *question* of standards and outcomes (what students have learned). The southern governors made their campaign for education reform a high priority for the National Governors' Association. Three of the most active southern governors were Lamar Alexander of Tennessee, Richard Riley of South Carolina, and Bill Clinton of Arkansas. The governors agreed that what mattered most was whether students were actually learning more, but that the governors would not get better results unless they set clear standards for *what students should know and be able to do* and identified or created good assessments to find out whether students were making progress toward the standards. The governors agreed that states should press for higher educational achievement while reducing the regulatory burdens on schools. (Ravitch, 1995)

This research project was undertaken to review the SACS-governed states and compare and contrast their individual state standards and then to compare those state standards to the ISTE national standards. A reference also has been incorporate to

include the National Business Education Association standards as well. Before researching the eleven individual state standards and other pertinent information, the previous research of literature would lead one to believe that there is a movement toward introducing keyboarding in the elementary school curriculum. Also, at first glance, most of the literature that has been assimilated for this project seems to lean toward introducing keyboarding in the elementary school curriculum and/or redesigning individual standards to reflect this trend.

Review of International Society for Technology in Education (ISTE) National Educational Technology Standards for Students (NETS)

For reference, a complete list of technology standards from the International Society for Technology in Education (ISTE) National Educational Technology Standards for Students (NETS) can be found in Appendix C. Also included in Appendix C is ISTE's Profiles for Technology-Literate Students (ISTE, 2000). ISTE has a core set of technology standards and linking performance indicators. These standards and profiles were meant to be utilized by teachers when planning technology-based activities that will help students accomplish success in learning, communication, and life skills. The six categories of the ISTE's NETS (which also has been referred to as the Technology Foundation for Students) are identified as:

- 1) Basic operations and concepts

- 2) Social, ethical, and human issues
- 3) Technology productivity tools
- 4) Technology communication tools
- 5) Technology research tools
- 6) Technology problem-solving and decision-making tools (ISTE, 2003)

For the purpose of this research, Standard #1 will be used for this study. The two sub-categories listed in the NETS standards are: Students will demonstrate a sound understanding of the nature and operation of technology systems, and Students are proficient in the use of technology (ISTE, 2003). To narrow the comparison, the researcher has selected the standard subcategory of: “Students are proficient in the use of technology” to focus on this study which will be referred to as NETS standard #1 (ISTE, 2003).

The Profiles for Technology Literate Students “reflect the underlying assumption that all students should have the opportunity to develop technology skills that support learning, personal productivity, decision-making, and daily life (ISTE, 2003). These Profiles are used as the measurement of attainment for the NETS standards. The Profiles have been arranged by grade classifications. Those classifications are: PreK-2, 3-5, 6-8, and 9-12. The Profiles are linked directly to the six NETS standards mentioned earlier. Each grade or level Profile contains ten performance indicators that are suggestive of what the students should know or should have mastered by the completion of the grade level classification or category.

Profiles for Technology Literate Students

Grades PreK-2 Profile states: “Students will: (1) Use input devices (e.g., mouse, keyboard, remote control) and output devices (e.g., monitor, printer) to successfully operate computers, VCRs, audio tapes, telephones, and other technologies (1)” (ISTE 2003). The number at the end of the quote in parenthesis refers to the NETS standard correlation.

Grades 3-5 Profile states: “Students will: (1) Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively (1)” (ISTE 2003).

Grades 6-8 Profile and 9-12 Profile do not directly address the use of keyboards but presume that students have mastered the skill of keyboarding and are using that skill to advance in other areas of technology such as applying strategies for problem solving, self-directed learning, ethical and legal uses and behaviors when using information and technology, extended learning, content-specific tools, software, simulations to support learning, etc. that all correlate to well-defined keyboarding skills.

For the purpose of this research, Grade PreK-2 and Grade 3-5 profiles will be used for the comparison analysis.

Review of the Individual State Curriculum Materials

For reference, all of the eleven states did have material that was accessible from the Internet. In Appendix A the reader will find a list of all the SACS states' Department of Education official website addresses and other relevant website addresses. In Appendix B, the reader will find copies of the actual material that was downloaded from the individual state websites and used in this research. The material is alphabetized for easy access. In some instances, e-mail correspondence was drafted to confirm state curriculum information. Copies of this correspondence can be found in Appendix D.

Alabama

In Alabama's curriculum substance, the material has guidelines that align with the ISTE NETS standards for students, which introduces keyboarding in the elementary school curriculum. In correlation to NETS, Alabama has aligned its Kindergarten-Second grade category with standard #1. Alabama expects by the end of this category, that "students will:

1. Demonstrate optimal posture and position at the computer workstation.
 - a. Eyes level with the text on the monitor
 - b. Shoulders down, arms relaxed
 - c. Elbows level with keyboard
 - d. Feet and lower back supported
 - e. Fingers curved

- f. Wrists slightly elevated
- 2. Communicate about technology using developmentally appropriate and accurate terminology. Examples: “press,” not “hit,” keys; open file, save
- 3. Identify the basic parts of a computer. Examples: keyboard, monitor, printer
- 4. Use input, output, and storage devices to successfully operate computers, VCRs, audiotapes, and other technologies. Examples: input-mouse, remote control; output-monitor, printer, speakers, headphones; storage-floppy disks, CDs
- 5. Use developmentally appropriate keyboard techniques. Example: left hand for left side keys and right hand for right side keys, special keys such as space bar, enter/return, backspace, shift, delete
- 6. Demonstrate correct procedures for opening, closing, and saving files using menu options and commands in grade-appropriate software.” (ISTE, 2003)

In correlation to NETS, Alabama has aligned its Third grade-Fifth grade category with standard #1. Alabama expects by the end of this category, that “students will:

- 1. Demonstrate optimal posture and position at the computer workstation.

- a. Eyes level with the text on the monitor
 - b. Shoulders down, arms relaxed
 - c. Elbows level with keyboard
 - d. Feet and lower back supported
 - e. Fingers curved
 - f. Wrists slightly elevated
2. Communicate about technology using developmentally appropriate and accurate terminology.
3. Use common input and output devices efficiently and effectively.
4. Use developmentally appropriate keyboard techniques. Example: home row placement
5. Describe correct procedures for troubleshooting simple hardware and software problems. Examples: adding printer paper, rebooting system, following classroom troubleshooting guides.” (ISTE, 2003)

In correlation to NETS, Alabama has aligned its Sixth grade-Eighth grade category with standard #1. Alabama expects by the end of this category, that “students will:

1. Demonstrate optimal posture and position at the computer workstation.

- a. Eyes level with the text on the monitor
 - b. Shoulders down, arms relaxed
 - c. Elbows level with keyboard
 - d. Feet and lower back supported
 - e. Fingers curved
 - f. Wrists slightly elevated
- 2. Communicate regarding technology using developmentally appropriate and accurate terminology.
 - 3. Demonstrate keyboarding proficiency in technique and posture while building speed.
 - 4. Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use.
 - 5. Utilize an operating system efficiently. Examples: proper shut down, file management” (ISTE, 2003)

In correlation to NETS, Alabama has aligned its Ninth grade-Twelfth grade category with standard #1. Students in the Grade category are expected to take Computer Applications course that provides students with basic concepts and skills regarding the knowledge of computer operations. From reviewing the Alabama material, the Computer Applications course is required for graduation with a high school diploma, high school

diploma with advanced academic endorsement credits, and alternate adult high school diploma credits. It is noted that this requirement may be waived if student can demonstrate competencies to qualified staff.

Alabama also has suggested time allotments for computer education for Grades 1-6. Those time allotments are as follows:

Grades 1-3, 60 minutes weekly

Grades 4-6, 60 minutes weekly

and that the local school systems are encouraged to include this time allotment in the school curriculums.

Florida

While researching the state of Florida's website, the researcher did not find a lot of information that correlated to the ISTE standards, yet the ISTE website does list Florida as a state that has either adopted, adapted, or aligned its standards with ISTE NETS. Florida has a set of standards called the Sunshine State Standards. In reviewing Florida's curriculum, Business Keyboarding and Keyboarding and Business Skills both have online frameworks. Business Keyboarding is geared to grades 6-9 and expectancies from the class include skills for increased productivity and efficient utilization of equipment while providing instruction in keyboarding (Florida Department of Education, 2003). Specific requirements include:

01.0 Develop keyboarding skills utilizing current technology.

02.0 Apply keyboarding skills utilizing currently technology.

03.0 Explore business career opportunities” (Florida Department of Education, 2003)

The other course offered in the Florida curriculum is Keyboarding and Business Skills. This is offered to grades 9-12. “Emphasis is placed on developing proficiency with touch keyboarding and fundamental word processing applications, so that they may be used as communication tools for enhancing personal and work place proficiency in an information-based society” (Florida Department of Education, 2003).

Georgia

Georgia is not coupled with NETS for students but is linked with the ISTE standards for Teacher and Administration. Georgia offers a Business Information Technology grades 6-8 curriculum that includes Standard III. Standard III is as follows:

“Business, Marketing, and Information Technology middle school students in Georgia will understand, apply, or assess proper keyboarding techniques” (Georgia Department of Education, 2003). The objectives for Business Information Technology 6-8 are as follows:

1. The students will be able to define keyboarding terms
2. The students will be able to use correct keystroking technique for the alphabetic keys

3. The students will be able to use correct keybstroking technique for the number keys
4. The students will be able to use correct keystroking technique for the symbol keys
5. The students will be able to operate the numeric keypad (Georgia Department of Education, 2003)

Kentucky

Kentucky has a Business Education guide sheet that lists Touch Keyboarding for 4-6th. Exploratory Computers is offered in the seventh grade and Keyboarding Applications for eighth and ninth graders. Touch Keyboarding for 4-6th grade with instruction time from six to nine weeks where development of skills in the operation of a touch keyboard with instruction based on the alphabet, numbers, and symbols with proper keyboarding technique. Touch Keyboarding includes the following competencies: “demonstrate proper keyboarding techniques, apply formatting to simple documents, apply standard rules of spelling, punctuation, grammar, and capitalization; organize and maintain workstation, age-appropriate software package and SCANS (Secretary’s Commission on Achieving Necessary Skills)” (Kentucky Department of Education).

Exploratory Computers is a course for seventh grade students and is a variable week course ranging from 6, 9, or 12 weeks that will provide the student with hands-on application of the following: “Keyboarding – apply appropriate fingering techniques and posture; Word Processing – create, edit, print, save, and retrieve documents; Database –

enter data, search and sort, and create simple reports; Spreadsheets – enter data, calculate, and print reports; Career Exploration – explore career opportunities; Graphics –create, print, save, and retrieve data; and Telecommunications – introduction to information transfer, electronic mail, and database. Students will demonstrate proper keyboarding techniques; apply formatting to block style letters, reports, charts/tables, and spreadsheets; explore job and career opportunities in computer-related areas and recognize the importance of communication skills; apply standard rules of spelling, punctuation, grammar, and capitalization; identify and explain telecommunications; identify characteristics of positive work habits and a good work ethic; and demonstrate organization and care of workstation.

Kentucky also offers Keyboarding Applications for students in the eighth and ninth grades that have little or no keyboarding experience. This course dwells on the implementation of the proper keyboarding techniques associated with touch-typing, speed, and accuracy. Kentucky does offer a Word Processing course that spends two to three weeks reviewing techniques and reinforcing speed and accuracy. Students must have had Exploratory Computers or an equivalent before they can enroll in this course.

Louisiana

Keyboarding is considered a foundation skill in each career major for Louisiana students. In the Standards and Benchmarks for Louisiana, it suggests that touch-typing be taught at the sixth-eighth-grade level and once the students enter high school they can enroll in other business classes. If the students have not mastered the skill of keyboarding prior to entering high school, Keyboarding and Keyboarding Applications

should be the first business course the students take (Louisiana Department of Education, 2003).

Louisiana's K-12 State Educational Technology Standards are aligned with NETS. The K-12 State Educational Technology Standards match directly with NETS. Louisiana also has Performance Indicators but they are not categorized as with the NETS Profiles. Louisiana's grade level classifications are: Grades K-4, 5-8, and 9-12. In reviewing the Performance Indicators for Louisiana and comparing them to NETS, the only major changes are the categories Louisiana uses.

Louisiana also recognizes the National Business Education Association (NBEA) standards and incorporates those into their career clusters. Courses offered in that include keyboarding instruction are: Keyboarding and Keyboarding Applications and are recommended before taking any other business course. The focus statement of the Information Systems cluster recommends that the first semester of Keyboarding should be taught at the junior-high or middle-school level (grades 6-8).

Mississippi

Keyboarding is offered for Mississippi public school students. It is scheduled for ninth grade students. ISTE NETS standards are being included in Mississippi's State Technology Plan revision and will be establishing a task force to develop standards during 2003-2004. Goal I states that all students will meet or exceed the state standards for student literacy in technology by 2008 (Mississippi State Department of Education, 2003).

North Carolina

North Carolina does not use the ISTE NETS material for their technology or state plan or development of curriculum guide sheets or frameworks. North Carolina does offer Computer/Technology Skills Objectives for Grades K-8. Beginning in the second grade, students are asked to demonstrate correct finger placement on the home row. Third grade students are expected to be able to demonstrate proper keyboarding techniques for upper- and lower-case letters. Fourth grade students reinforce previous keyboarding practices for upper and lower case letters. Fifth grade students should be able to improve speed and accuracy while sixth grade students use keyboarding skills to increase productivity and accuracy (North Carolina, 2003).

North Carolina has a Computer/Technology Skills Curriculum designed for 9-12 grades. This course is geared for students who know how to key correctly.

South Carolina

South Carolina has the inclusion of the ISTE NETS standards in its Educational Technology Plan. The researcher could not find curriculum guide sheets that included the NETS standards. However, Keyboarding was found as a middle-school course for high school credit. South Carolina also stated in its material that students could test out of or take a proficiency test in keyboarding. South Carolina also uses the NBEA curriculum standards as well.

Tennessee

Tennessee has not adopted, aligned, or adapted the NETS standards into its curriculum, yet in the keyboarding material it lists, in the Integration/Linkages area, reference to National Educational Technology Standards. The NBEA standards are also included in this reference area. The State of Tennessee offers keyboarding for ninth, tenth, eleventh or twelfth grade students. Some systems require all ninth graders to take Keyboarding as they enter high school. Tennessee also has available online competency profile sheets for verification of meeting state standards in keyboarding. The following is a list of Keyboarding standards:

The student will:

1. operate and maintain the workstation
2. operate the keyboard using the touch system
3. apply language arts skills to prepare business documents
4. demonstrate speed and accuracy using the touch system of keying
5. format text
6. key business documents
7. demonstrate organizational and professional leadership skills

(Tennessee Department of Education, 2003)

Tennessee also offers a Keyboarding Applications course that builds on the Keyboarding class.

Texas

Texas has referenced the ISTE NETS standards and currently has developed a set of standards called The Technology Applications Texas Essential Knowledge and Skills (TEKS), which describe what the students should know and be able to do in, regards to technology and using technology successfully. The TEKS are organized in four groups for all ages; K-12 as follows: Foundations, Information Acquisition, Work in Solving Problems, and Communications.

The TEKS standards for the following grade classifications are:

1. Grades K-2 – using skills for inputting information plus beginning touch keyboarding skills
2. Grades 3-5 – use of proper keyboarding techniques and acquiring information by search strategies
3. Grades 6-8 – students build on Grade 3-5 knowledge and continue to demonstrate keyboarding proficiency in technique and posture while building speed
4. Grades 9-12 – high school courses that include Computer Science I and II, Desktop Publishing, Digital Graphics/Animation,

Multimedia, Video Technology, Web Mastering, and Independent
Study in Technology Applications.

Texas offers Introduction to Keyboarding at the middle school level.

Keyboarding is offered in the high school grade levels.

Virginia

Virginia is listed on ISTE's website as one of the members that has adopted, adapted, or aligned its standards. The researcher could not find any indication of this from the Virginia Department of Education website. Virginia lists as one of its skills that students should master by the end of grade five the development of basic keyboarding skills. At the end of grade eight, students will be able to compose and edit multi page documents (Virginia Department of Education, 2003). By the end of grade 12, students should be able to demonstrate touch-typing skills in computer use.

Keyboarding for middle school – six week timeframe consists of keying alphabetic, numeric, and symbol information using a touch system and correct techniques. Another part of this class is to increase keyboarding speed and accuracy. A middle school Keyboarding class offered for nine weeks consists of improvement of keyboarding techniques with the inclusion of keying alphabetic, numeric, and symbol information using a touch system and correct techniques, in conjunction with increased keyboarding speed and proficiency. A middle school Keyboarding twelve-week course includes all material in the nine-week course syllabus along with formatting letters,

memoranda, reports, outlines, and tables, using the English writing process steps. An eighteen-week Keyboarding class seems to be identical to the twelve-week.

Summary

After gathering this information from all the involved agencies and state department of education material, coding instruments will be developed to reflect a relationship between the agencies and the states. This collection of literature was necessary to compile data in relationship to the time frame state school systems implement, or plan to implement keyboarding in the school curriculum. With such national attention being placed on accountability in the classroom, standards are being put into place to align classroom content to address the issues of student achievement. Standards are used in every state that was researched for this project. Standards are necessary guides for states, schools, teachers, students, parents and the community to access the development and advancement of technology in the classroom. Research on these standards has shown a broad scale of when keyboarding is implemented into the curriculum and if the International Society for Technology in Education (ISTE), the Southern Association of Colleges and Schools (SACS), or the National Business Education Association (NBEA) standards influenced the curriculum of each state. Based on the previous chapter's review of literature, when to introduce keyboarding into the school curriculum has been a research topic for some time. Hopefully, this study will help states perpetuate the implementation of keyboarding in the curriculum at the optimal age level or grade level.

At the present time, technology is being recognized as a major skill that students need to possess for personal and professional achievement. Benefits of technology had not been recognized in 1999 in one study but did state that technology was essential for inclusion in education (Mellon). In the time since then, several studies have been written in favor of the benefits of technology in education (Alabama Course of Study, 2003; Technology Counts, 2003; NBEA, 2001).

CHAPTER 3

METHODOLOGY

Introduction

As indicated earlier, the focus of this comparison analysis was to answer the question: “Based on a comparison of published standards of ISTE and SACS-governed states for keyboarding instruction, what are the relationships (a) among states, and (b) between each state and ISTE with emphasis on grade level implementation?” This chapter contains the pertinent material about the specific completion of the comparison analysis. The researcher was responsible for gathering relevant information related to the specific states governed by SACS.

This chapter concentrated on the methodology used in the comparison analysis of this study. This chapter includes the diagram shown in Figure 1. Methodology Conceptual Framework that was used as a flowchart or guideline for implementing this project. This chapter also describes the research population and sample that was used in creating the comparison analysis. Additionally, this chapter determined and outlined the research method or approach. A coding instrument was created to compare state material. This coding instrument provided the data for comparison of the ISTE national standards for grade-level implementation.

The research method or approach chosen for this project was a comparison analysis. A comparison, as referred to by Hodges’ Harbrace, “points out similarities” and also refers to analysis as “an interpretation that attempts to explain the meaning of one aspect of a work” (2001). Since this study was based upon the focus and assessment of

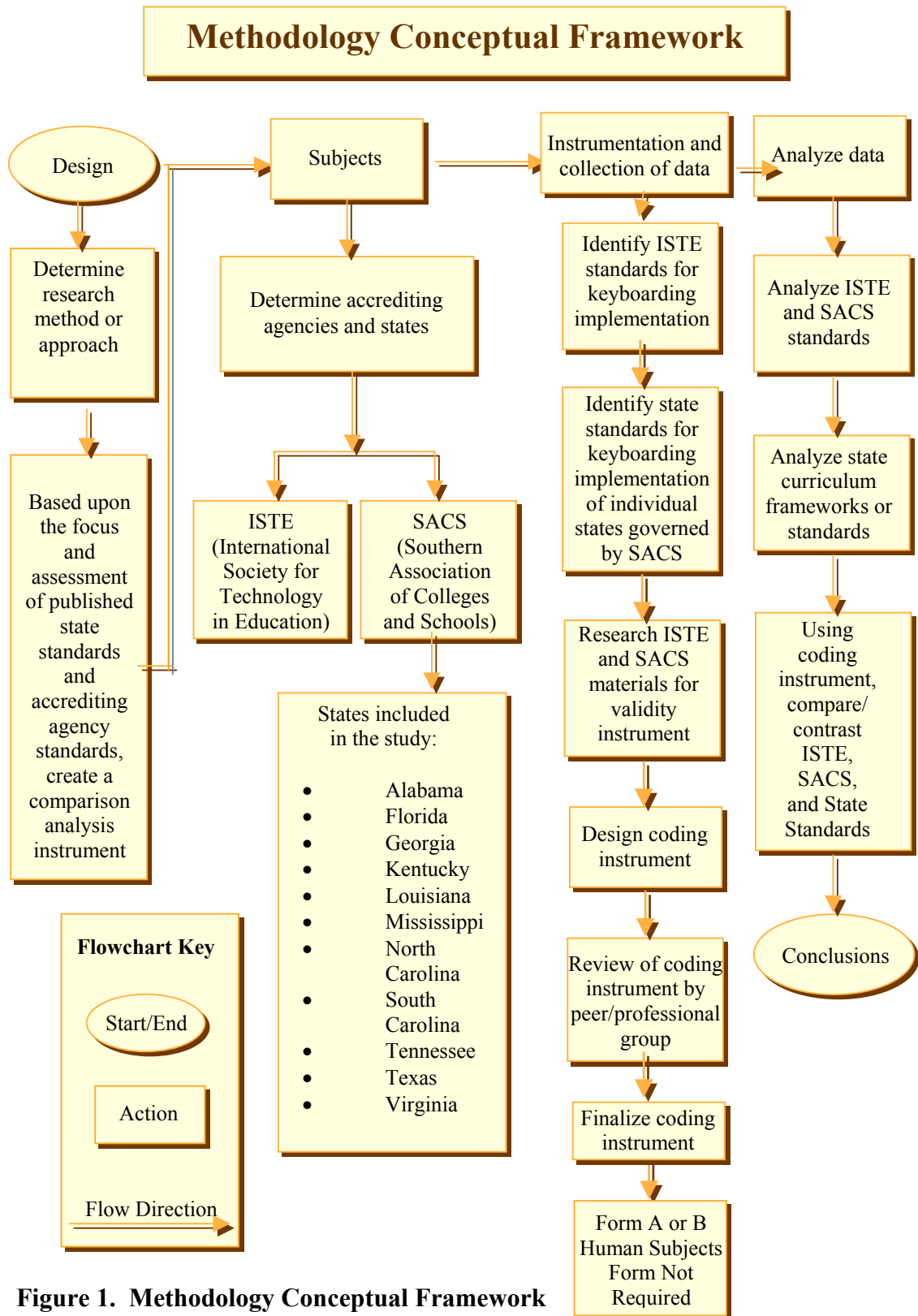


Figure 1. Methodology Conceptual Framework
Created by: Nancy P. Knox

published state standards and accrediting agency standards, it was determined that the best way to display the comparison analyses was to create coding instruments that would correlate the significant information to this study in an easier to understand and more readable fashion.

Research Population and Sample

This study used for its population the keyboarding standards published on the Internet at the department of education individual state websites of the eleven member states of SACS. A list of these state website addresses is given in Appendix A. The sources were “real-world” practices. The keyboarding data was used as primary sources. Primary sources of information for this study were defined as original or authorized state department of education documents downloaded from the Internet from the official web pages of each individual state governed by the Southern Association of Colleges and Schools (SACS). These sources were available to and for anyone with Internet access at the time of this study. Primary data documents were collected from each website of the states listed in this research study. The researcher also revisited the related state websites periodically for updates, additions, revisions, or deletions of significant material that may add to the validity of the study.

Included in this research as primary data documents were technology standards from the International Society for Technology in Education (ISTE), a nationally recognized organization that is the established leader in the resource of technology standards and benchmarks. A list of these national standards is compiled in Appendix C.

Since this material was obtained from the Internet and no human subjects were queried, permission or the filing of Human Subjects Form A or B was not necessary. The Compliance Officer at The University of Tennessee, Knoxville was visited and, again, it was determined that no Human Subjects Form A or B was necessary.

Each state had different methods of listing and posting its data which made finding, accessing, and retrieving the collection of primary documents very difficult. The location in some instances of important information was very nearly impossible to find. Most of these state websites used committees or research boards to create their primary documents, which, in turn, created a tremendous amount of material through which to search for data necessary for this work. Some had external links that held the information the researcher was seeking. These documents have been generated in the last five years and are currently being used by each instructor in the state and all the states appear to keep their information updated as necessary, making the obtained information as appropriate and meaningful to this project as possible.

To implement this comparison analysis, the following items were needed: a list of states governed by SACS, the individual state standards, benchmarks, competency profiles, guide sheets or frameworks, and the ISTE national standards for technology. The decision to use the Southern Association of Colleges and Schools (SACS) states as the means for the selection of states to involve in this study was random, since the criteria was not based on the organization but from the standpoint that Tennessee was included in its list of member states. There are several national accrediting agencies in the United States. Selection of Southern Association of Colleges and Schools (SACS) was also due to familiarity with some of their accreditation standards in addition to the fact that

Tennessee is a SACS governed state. The states governed by the Southern Association of Colleges and Schools (SACS) are Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

When collecting the population data, communication in the form of e-mail was sent to contact personnel listed on the individual state websites for clarification and/or directions to each state's set of standards, benchmarks, guidelines, or profiles. In some cases, states had listed a compilation of standards, benchmarks, guidelines, and/or profiles; complete frameworks and other sites had a skeletal design. Collections of these sources are attached in Appendix B. This material was directly downloaded from the Internet and organized alphabetically by state so retrieval would be systematic. These standards, benchmarks, guidelines, frameworks, and/or profiles are key to the development of the comparison analysis and validate the link between the standards of each state and documents the states considered to be their assessment tools for in-the-classroom accountability. In some instances it was necessary to follow up e-mail communication with phone calls to state contacts to find much needed, pertinent data on the official state website addressing imperative information that cited the state standards.

As with any quality research, one must identify and include primary sources to help validate the research. The Southern Association of Colleges and Schools was chosen as a primary source in this research because of the national recognition of this organization. On the SACS website, it defines its primary mission as: "the improvement of education in the southern United States and other geographical areas by recognizing and encouraging institutional quality through accreditation" (SACS, 2003).

The key descriptors used in this study were gleaned from the standards, frameworks, benchmarks, guidelines, and/or profiles from each state governed by SACS. Those states being Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. The focus of the key descriptors was the actual introductory or learning of touch-typing or keyboarding skills. Comparison of these key descriptors was the focus or primary accountability for the reliability of this study. The use of these key descriptors allowed the primary investigator to assemble a comparison analysis format that would allow the reader to see the validation of the data.

As with any featured research, one must also identify and include secondary sources to help validate the research. The International Society for Technology in Education (ISTE) has developed a set of standards labeled as the National Educational Technology Standards (NETS,) and these nationally recognized standards were used as the secondary resource to authenticate this research. NETS lists as their primary goal “to enable stakeholders in PreK-12 education to develop national standards for educational uses of technology that facilitate school improvement in the United States. The NETS Project will be to define standards for students, integrating curriculum technology, technology support, and standards for student assessment and evaluation of technology use” (ISTE, 2003). ISTE is an internationally recognized organization by vocational-technical education as well as academic educators. This comparison adds accountability for the state comparisons. The ISTE NETS standards are included in Appendix C.

Instrumentation and Data Collection

In selecting the instrumentation and method of data collection, identifiers had to be selected. The researcher selected the research methodology of comparison analysis to guide this project. Identification of ISTE standards for keyboarding implementation were selected and used in a guide for standards of the development of a comparison guide. Appendix C contains these ISTE national standards. Not only did ISTE have standards identified as National Educational Technology Standards for Students (NETS), it also listed grade-specific Profiles for Technology Literate Students (ISTE, 2003). As stated earlier, both sets of standards are found in Appendix C. The NETS standards have six different categories dealing with technology. These six categories are:

- 1) Basic Operations and Concepts,
- 2) Social, Ethical, and Human Issues,
- 3) Technology Productivity Tools,
- 4) Technology Communication Tools,
- 5) Technology Research Tools
- 6) Technology Problem-Solving and Decision-Making Tools (ISTE, 2003).

The researcher focused on the NETS standard identified as Standard #1, entitled Basic Operations and Concepts. Two proficiencies fall under this heading:

- (a) Students demonstrate a sound understanding of the nature and operation of technology systems, and
- (b) Students are proficient in the use of technology (ISTE, 2003).

Out of the ISTE NETS standards, it was determined that this standard and set of proficiencies related directly to the topic of this research that deals with implementation of introductory keyboarding or touch-typing in the curriculum. After identifying the ISTE NETS standards used in this research, the next steps were to identify the states to be recognized and utilized in this research. The state standards for keyboarding implementation used in this research would be from individual states governed by SACS and harvested from state websites. A list of these states and their official state department of education website addresses are listed in Appendix A.

Research ISTE and SACS States Materials

While researching ISTE and SACS material for validation for the creation of coding instruments, the researcher contacted the individual state telephone numbers identified in the SACS documentation as representatives of the eleven states. After speaking to each member or a representative of that office specified in the SACS State Committee Office listing, it was determined that SACS does not have specific standards by grade level or age level that identify introductory keyboarding or touch-typing as a requirement in the curriculum for each state. A list of the phone numbers used to obtain or verify information is found in Appendix E.

Coding Instrument Design for ISTE, SACS and NBEA Materials

After visiting the International Society for Technology in Education's website, it was noted that there is a listing created by ISTE that has a compilation of states that use NETS standards. It was stated that 48 out of 51 states have adopted, adapted, aligned, or

referenced the ISTE NETS in their official state documents (ISTE, 2003). A copy of this document is included in Appendix F. The researcher created a basic version of this material to simplify the research that includes just the states involved in this study. This table is labeled Table 3. Comparison of SACS states to ISTE NETS Standards.

Coding Instrument Design For Individual State Materials

After downloading the pertinent individual state materials, a coding instrument was created and the states were listed for a comparison in relationship to when introductory keyboarding or touch-typing is introduced in the curriculum. Table 1. State-to-State Comparison of Implementation of Keyboarding reflects this comparison.

Review of Coding Instruments by Peer/Professional Group

The researcher reviewed the results of the comparison analyses following the completion of the charts created for analyzation. There were three coding instruments designed to relate the results of the findings. After meeting with several high school Business Education and Information Technology teachers, the coding instruments were endorsed by the group. After completion of and endorsement of the coding instruments, the researcher synthesized a series of charts/tables to depict the overall success of this comparison analysis study. These coding instruments appear in Chapter Four.

Research Analysis

Upon finalization of the data collection and creation of coding instruments, data was keyed into the coding instruments that resulted in the creation of graphic tables.

These charts appear in Chapter Four. After analyzing the data collected from the ISTE and SACS websites, data were stored in the Appendices A, C, E, and F. A table was created to reflect the results of the data retrieved. Evaluation of state curriculum frameworks or standards followed and another chart was generated to reflect the outcome. From reviewing the tables created for analysis of the data, the reader can compare the ISTE, SACS, and state standards.

CHAPTER 4

RESULTS

Introduction

As indicated previously, this comparison analysis was undertaken to determine, through a review and assessment of the standards for the eleven states governed by SACS, at what age level or grade level keyboarding is being introduced in the public school systems. It was important to identify the factors that contribute to students' learning keyboarding skills and what age level or grade level each state considered to be most appropriate to begin keyboarding instruction. Also, another problem of concern this research sought to address was how the SACS-governed schools and competency profiles compare to the ISTE national standards for implementing keyboarding or technology into the public school system.

This chapter states the results of the comparison analysis and contains the results for this research study. Information included in this chapter reflects data collected by the individual researcher of this study.

The curriculum materials of the eleven state members of SACS were retrieved from the Internet. Also, through e-mail communications, it was noted that some states did verify the correct web address of desired information when the researcher questioned the availability or had difficulty in accessing pertinent state websites. Three national associations were included in this project as accepted national organizations that benchmark the instruction and use of technology in the classroom. Those associations

were: Southern Association of Colleges and Schools (SACS), International Society for Technology in Education (ISTE), and the National Business Education Association (NBEA).

Findings

Part A of the research question addressed the correlation among the states in regard to keyboarding instruction and what age level(s) or grade level(s) were used for implementation. The objective was measured by the creation of a coding instrument that would show comparisons and possible constraints of each state. This coding instrument is included as Table 1. State-to-State Comparison of Implementation of Keyboarding. The objective was met through the creation of the coding instrument and was used as a visual check of each state's standards, benchmarks, competency profiles, guidelines, and/or frameworks.

Table 1. State-to-State Comparison of Implementation of Keyboarding

State-to-State Comparison of Implementation of Keyboarding				
State	PreK-2	3-5	6-8	9-12
Alabama			6-8	
Florida			6-8	9-12
Georgia			6-8	
Kentucky		4-5	6-8	9
Louisiana			6-8	9-12
Mississippi			8	9
North Carolina	2	3-5	6	
South Carolina			6-8	
Tennessee				9
Texas	PreK-2	3-5	6-8	
Virginia		5	6-8	

The findings displayed in Table 1 indicate that some states used a variety of age levels or grade levels to implement keyboarding into their curriculum. The percentage of state responses that use more than one category to implement keyboarding into their curriculum is based on a total of eleven individual state curriculum materials. The seven states that spread the implementation or introduction of keyboarding over more than one category were: Florida, Kentucky, Louisiana, Mississippi, North Carolina, Texas, and Virginia. The actual percentage results were 63.6% that utilize more than one grade level to introduce keyboarding in their curriculum. Results also indicated that only three schools introduced introductory keyboarding or touch-typing in a middle school or grade-level classification as the only level of implementation. These three states are: Alabama, Georgia, and South Carolina. The percentage results were 27.2% that begin introductory keyboarding or touch-typing instruction only in a middle-school grade classification. In further analysis of the data, four states offer introductory keyboarding classes in both middle- and high-school grade level classifications. Those four states are: Florida, Kentucky, Louisiana, and Mississippi. The 36.3% total reflects this. There was only one state that only offered introductory keyboarding or touch-typing in the high school setting, which was stated as ninth grade level, and that state was Tennessee. The 9% reflects this one state. In analyzing the individual on-line material, the researcher discovered that some schools did offer classes to include advanced-level keyboarding opportunities, but the keyboarding skills proficiency or level mastered that were required, was above the introductory or beginning keyboarding level or touch-typing level. Table 2. State-to-State Comparison – Statistical reflects this information in a visual format.

Table 2. State-to-State Comparison – Statistical

Category	Number of State Participants	Percentage Results	States
One middle-school category	3	27.2	Alabama Georgia South Carolina
More than one grade classification	7	63.6	Florida Kentucky Louisiana Mississippi North Carolina Texas Virginia
Middle- and High-school	6	54.5	Alabama Georgia North Carolina South Carolina Texas Virginia
High-school only	1	9.0	Tennessee

In addition to the material in the chart above, data gathered reflects that ten of the eleven states offer some type of introductory keyboarding or touch-typing course for sixth-eighth graders and others offer introductory instruction without any regard to grade level (Refer to Table 2). This category reflects a 90.9% inclusion rate of introductory keyboarding or touch-typing in the middle school offering of keyboarding. Research states that without boundaries set for beginning instruction, students are allowed to continue reinforcement or learning of very “difficult to correct” keying habits.

Part B of the research question addressed the liaison between each state and the ISTE national standards in regard to grade level implementation. The researcher created

a coding instrument that reflects the ISTE national standards compared to the standards of each individual state. This coding instrument is labeled as Table 3. Comparison of Southern Association of Colleges and Schools (SACS) States to International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS).

In Appendix F, there is a copy of published material that ISTE has in its documentation on its website. This appendix material shows that forty-eight of the fifty-one states have utilized the ISTE standards in some manner, such as adopted, adapted,

Table 3. Comparison of Southern Association of Colleges and Schools (SACS) States to International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS)

Comparison of Southern Association of Colleges and Schools (SACS) States to International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS)	
State	A=adopted, adapted, or aligned with; R=referenced
Alabama	A
Florida	A
Georgia	*
Kentucky	A
Louisiana	A
Mississippi	A
North Carolina	**
South Carolina	A
Tennessee	***
Texas	R
Virginia	A

- * Georgia uses NETS for Teacher and Administration Standards, but not for Students
- ** North Carolina does not use NETS Standards
- *** Tennessee adopted, adapted, aligned with for Teacher Standards; referenced for Administration Standards

aligned or referenced the material in their state curriculum (ISTE, 2003). By creating another chart instead of using the ISTE chart, it focuses directly on the eleven states governed by SACS. This chart is labeled Table 3. Comparison of SACS States to ISTE NETS Standards and is representative of the SACS states and their relationship to ISTE NETS standards. By analyzing this data, Alabama, Florida, Kentucky, Louisiana, Mississippi, South Carolina, and Virginia have either adopted, adapted, or aligned with the NETS standards for students. Georgia, Tennessee, and North Carolina have not adopted, adapted, or aligned with the NETS standards for students. Texas has referenced the NETS standards for students.

To analyze the data further, a table was created to show statistical information regarding the relationship of SACS-governed states using ISTE standards. This information is found in Table 4. Comparison of International Society for Technology in Education (ISTE),\ and Southern Association of Colleges and Schools (SACS) States – Statistical.

Almost 73% of the eleven states analyzed are utilizing ISTE standards in their curriculum standards for students in introductory keyboarding or touch-typing courses. ISTE does have NETS standards for Administration and Teachers and those standards were not included as a part of this study since the research was based on measuring the availability by grade level of student access to introductory keyboarding or touch-typing classes. It was noted earlier that Georgia and Tennessee utilized ITSE standards for either Teacher and/or Administration Standards. The identifying coding instrument

Table 4. Comparison of International Society for Technology in Education (ISTE), and Southern Association of Colleges and Schools (SACS) States – Statistical

Grouping	Number	Percent	Number	Percent	Number	Percent	Total Using
	A		R		N/A		ISTE
Aligned Adopted Adapted	7	63.6%					
Referenced			1	9%			
Not Partnered with ISTE					3	27.2%	
Total using ISTE							72.6%

A = Aligned, Adopted, Adapted

R = Referenced

N/A = Not Partnered with ISTE

labeled Table 5. Grade Level Implementation for Technology in Education (ISTE), Southern Association of Colleges and Schools (SACS) States and National Business Education Association (NBEA) shows the correlation between the ISTE, SACS States and the NBEA standards as well.

All of these tables represent original, creative works that correspond to the measure of success for the objectives of this comparison analysis research. Overall, the summary of findings gleaned from a review of the individual coding instruments revealed in the course of this project suggested a correlation between the individual states and the ISTE national standards, since almost 73% of the reviewed states utilized ISTE standards. Based on this observation, success was measured by the relationship between the states and the ISTE national standards.

Table 5. Grade Level Implementation in Comparison to International Society for Technology in Education (ISTE), Southern Association of Colleges and Schools (SACS) States and National Business Education Association (NBEA)

Grade Level Implementation in Comparison to International Society for Technology in Education (ISTE), Southern Association of Colleges and Schools (SACS) States and National Business Education Association (NBEA)				
State, ISTE, NBEA	PreK-2	3-5	6-8	9-12
ISTE		3-5		
NBEA	PreK-2	3-5	6-8	9-12
Alabama			6-8	
Florida			6-8	9-12
Georgia			6-8	
Kentucky		4-5	6-8	9
Louisiana			6-8	9-12
Mississippi			8	9
North Carolina	2	3-5	6	
South Carolina			6-8	
Tennessee				9
Texas	PreK-2	3-5	6-8	
Virginia		5	6-8	

Summary of Findings

In summarization, the initial findings of the research indicate that the research question for this study can be answered. Since the research question, “Based on a comparison of published standards of ISTE and SACS-governed states for keyboarding instruction, what are the relationships (a) among states, and (b) between each state and ISTE with emphasis on grade level implementation?” was divided into two parts, the two sets of findings have been summarized as follows:

State-to-State Relationship to Grade Level

A total of eleven states' curriculum material was retrieved from the Internet for inclusion in this study. From that material, it was found that there seems to be a trend or movement of offering introductory keyboarding or touch-typing in the middle-school grade levels. Data indicated that only one state, Tennessee, did not offer some beginning or introductory keyboarding class during the 6-8 middle school grade level. Table 1 indicates that only two states have in place material for introducing keyboarding or touch-typing in the Pre-K-2 grade level. From earlier research, studies have designated that students in the early grade levels can learn to use technology properly with guidance from teachers. Five states continue to offer introductory keyboarding in the high school grade level for 45.4%.

ISTE and SACS State Relationship to Grade Level

There seems to be a parallel between the individual states and the ISTE national standards since almost 73% of the reviewed states utilized ISTE standards in their curriculum frameworks. The ISTE NETS standard recommendation for the implementation of introductory keyboarding or touch-typing is 3-5 grade level classification. Table 5 suggests that there is a relationship between the ISTE standards and the percentage of states offering keyboarding in the 3-5 grade level classification. 36% of the eleven states, for an inclusion total of four states, are offering keyboarding in the 3-5-grade level.

The reflection of the comparison of inclusion of the NBEA standard in Table 5 also influences the reader to assume that national organizations are recognizing the

importance of offering beginning or introductory keyboarding skills at middle-school grade levels, or even earlier. NBEA recognizes the magnitude of the continuation of and reinforcement of keyboarding in the entire public school system curriculum. Studies have been done that verify students are graduating without the necessary skills for employment in the work force. Vocational Education has focused on the value of technology and has tried to “keep up” with the skills necessary for successful employability and the success of students. This confirms the value of the declarations of A Nation At Risk that was drafted in 1983 and every legislation since, suggesting the importance of technology skills being taught in education (National Commission on Excellence in Education, 1983). Since the results of this study included for comparison, ISTE standards to the curriculum of each individual state, it would further indicate that introductory keyboarding or touch-typing needs to be offered in at least the middle-school public educational school system.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

Summary of Study

The purpose of this comparison analysis was to answer the question: “Based on a comparison of published standards of ISTE and SACS-governed states for keyboarding instruction, what are the relationships (a) among states, and (b) between each state and ISTE with emphasis on grade level implementation?”

Data were collected from states governed by the Southern Association of Colleges and Schools (SACS). Those states are: Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia. The material from Tennessee was included in the research. Data were collected over the spring semester to make sure the latest available data were used in the study and verified by rechecking the state website periodically to look for any additional changes that might include updated information. This data were also compared to evaluate the state standards based on the International Society for Technology in Education (ISTE) standards.

It was also noted that some states have in place requirements for graduation that include the completion of or proficiency testing of introductory keyboarding skills.

From the data analyses reports, it seems that ten of the eleven states have introduced some level of introductory keyboarding or touch-typing skills in the grade 6-8 level classification, with Tennessee being the only SACS state that has not introduced a

formal set of introductory keyboarding or touch-typing keyboarding classes for middle school 6-8 grade level students.

Conclusions

By reviewing the comparison of the ISTE NETS national standards to the individual state standards, one can obviously see a trend to conformity for introduction of technology standards for all students in all grade levels in the public educational school systems of the states governed by SACS. In examination of the state and organizational material, such as Standards and Technology Plans, age level was not an indicator; grade level was the referenced signifier.

Technology has been a “buzz” word for the last decade and it would be considered a national phenomenon because of the new attention to No Child Left Behind legislative measures. With such strong emphasis for incorporation and/or improvement of technology in the public school systems, children will be held accountable for self-directed learning and retention of that knowledge base. Educational representatives must be willing to change to include these new recommendations for student achievement and lifelong skills.

Implications

From the review of the comparison analysis, there is evidence that reflects a growing trend to introduce keyboarding at earlier grade levels. With this implication comes the realization that revamping the current curriculum engages national, state, and local educational personnel to be in the decision-making process since it affects all

human resources involved. For instance, asking an elementary education teacher to “add” one more thing to his/her plate of instruction to include the instruction of keyboarding might be the straw that breaks the proverbial camel’s back. Further questions suggested by the results of this study:

- (1) Should all middle and elementary schools have technology instructors for introducing keyboarding?
- (2) Will middle and elementary school teachers have to apply for certification in the current keyboarding endorsement?
- (3) Is the money available to have computer labs installed to accommodate the implementation of keyboarding in elementary and middle school public school systems?
- (4) If mandates are placed to include keyboarding at an earlier age, who will bear the financial responsibility for purchasing the equipment, hiring or moving already certified keyboarding instructors, and how will it affect the curriculum for those systems involved?

Recommendations for Further Research

Results of this project will be shared with the Southern Association of Colleges and Schools (SACS), the International Society for Technology in Education (ISTE), and individual states included in the comparison analysis. A copy of this project will also be shared with the researcher’s school system vocational supervisor and state vocational supervisor with the recommendation that introductory keyboarding be incorporated into the elementary or middle-school computing curriculum for instruction.

Through the writer's teaching involvement at the high school level, this project will also be shared with business and information technology teachers from many school districts and states. The findings of this study do indicate the need for further research.

The following are promising research possibilities and recommendations that might ensure greater keyboarding proficiency and retention:

1. Future research might include a national comparison of state-to-state standards. Using the same data collection process, a national comparison could be established. Correlation to the governing accrediting agency for the individual state and a national organization such as ISTE could be generated to repeat this study on a national level.
2. This research was limited to the state standards that were posted on an Internet website. Even though most states try to keep their information up to date and accurate, there is room for improvement for the collection of the data. State supervisors could be contacted for the most up-to-date and suitable information and this study could be repeated to validate the results.
3. The review of literature revealed that studies regarding the "correct" grade level to implement keyboarding have been developed since at least 1989 and concern for the skill being introduced properly has been a leading indicator in most of those reviews. Future research regarding implementation of keyboarding at earlier age

or grade levels be recorded and compared throughout the control group's public school enrollment be undertaken. The data could then be compared to systems that did not offer keyboarding throughout the PreK-12 grade level classifications to validate the implementation of introductory keyboarding or touch-typing classes in the elementary grade levels with reinforcements throughout the control group's enrollment in the public school systems.

Further research questions might include:

4. (a) How many public school systems offer a proficiency test, which, if the students pass the test, would allow them to be exempt from taking introductory keyboarding or touch-typing class, and (b) at what grade level a proficiency test is or would be implemented?
5. Since this study focused directly on the material retrieved from the Internet and did not include proficiency results from those states offering introductory keyboarding in the middle schools, it would be interesting to retrieve more comprehensive data regarding the retention rate and skill level of those students once they leave the introductory class.
6. With the implication of introductory keyboarding being taught in the middle and/or elementary public school systems, how do current high school business and information technology teachers (those mainly responsible for the instruction of

keyboarding) perceive the notion of being required to transfer or commute to the middle or elementary public schools to deliver the instruction of keyboarding. Further, how do the same teachers feel about the current situation of teaching keyboarding to high school students that by this time have acquired improper keyboarding techniques and skills?

7. Finally, additional research may ask, how does the certification of business and information technology teachers relate to elementary and middle school endorsement areas or codes for the instruction of keyboarding?

Impressions and/or Surprises

It was surprising to find that Tennessee was the only state not offering some type of introductory keyboarding or touch-typing skills until the ninth grade. Another element of disclosure was the fact that ten of the eleven states surveyed offered some type of introductory keyboarding or touch-typing in the 6-8-grade level. Also, the 73% ratio of those states adopting, adapting or aligning with ISTE standards was higher than expected.

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APPENDICES

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APPENDIX A

States Governed by Southern Association of Colleges and Schools (SACS)

Alabama – Alabama State Department of Education -

<http://www.alsde.edu/html/home.asp> and

Technology Education -

http://www.alsde.edu/html/sections/doc_download.asp?section=61&id=2002417151754

Florida – Florida Department of Education - <http://www.firn.edu/doe/>

Business Technology Education Frameworks -

http://www.firn.edu/doe/dwdframe/be/be_frame.htm

Georgia - Georgia Department of Education - <http://www.doe.k12.ga.us/> and

The Home of the Georgia Professional Standards Commission -

<http://www.gapsc.com/> and QCC Standards -

<http://www.glc.k12.ga.us/passwd/trc/ttools/attach/techinteg/QCCCurrTechInteg.pdf>

Kentucky – Kentucky Department of Education Homepage –

<http://www.kde.state.ky.us/default.asp?m=42> and KDE – Search Result –
Keyboarding – BusinessProgramStudies101.doc

<http://www.kentuckyschools.net/cgi-bin/MsmFind.exe?QUERY=keyboarding>

Louisiana – Louisiana Department of Education Home Page I-

<http://www.doe.state.la.us/doe/asps/home.asp> and Business Education
Content Standards Curriculum Framework for Louisiana (PDF)

<http://www.doe.state.la.us/DOE/PDFs/Bused.pdf>

Mississippi - External link from the Mississippi.gov Web Site -

<http://www.state.ms.us/frameset.jsp?URL=http://www.mde.k12.ms.us/v>
and Business and Technology -

<http://www.state.ms.us/frameset.jsp?URL=http://www.mde.k12.ms.us/> and
click on the Business and Technology link at the bottom of the site at:
http://www.rcu.msstate.edu/curric_form.htm

North Carolina – Public Schools of North Carolina - <http://www.dpi.state.nc.us/> and Computer/Technology Skills Curriculum - <http://www.ncpublicschools.org/curriculum/computer.skills/index.html>

South Carolina - South Carolina State Department of Education - <http://www.sde.state.sc.us/> and Business, Management, and Administration Course Competencies - <http://www.myschools.com/offices/cate/competencies/BusMktgComTech.htm>

Tennessee – Tennessee Department of Education - <http://www.state.tn.us/education/> and Information Technology Keyboarding Competency Profile <http://www.state.tn.us/education/vebikeybdvocstudprof.pdf> and Business and Information Technology Standards <http://www.state.tn.us/education/vebusinfstan.htm>

Texas - Welcome to the Texas Education Agency - <http://www.tea.state.tx.us/> and Texas Administrative Code (TAC), Title 19, Part II Chapter 120. Texas Essential Knowledge and Skills for Business Education – <http://www.tea.state.tx.us/rules/tac/chapter120/index.html>

Virginia – Virginia Department of Education - <http://www.pen.k12.va.us/> and Commonwealth of Virginia Board of Education Standards - http://www.pen.k12.va.us/VDOE/VA_Board/Standards/standards.shtml and Computer Technology Standards of Learning By the End of Grade Eight - <http://www.pen.k12.va.us/VDOE/Superintendent/Sols/comptec8.pdf> and Computer Technology Standards of Learning By the End of Grade Five - <http://www.pen.k12.va.us/VDOE/Superintendent/Sols/comptec5.pdf> and Computer Technology Standards By the End of Grade Twelve - <http://www.pen.k12.va.us/VDOE/Superintendent/Sols/comptec12.pdf> and Foreword for Virginia Standards of Learning - <http://www.pen.k12.va.us/VDOE/Superintendent/Sols/foreword.pdf>

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Individual State Material

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Alabama Course of Study

Technology Education

Alabama standards – Source: Alabama Technology 2003

http://www.alsde.edu/html/sections/doc_download.asp?section=51&id=20026241

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State Superintendent of Education
ALABAMA DEPARTMENT OF EDUCATION
Bulletin 2002, No. 21

http://www.alsde.edu/html/sections/doc_download.asp?section=61&id=2002417151754



For information
regarding the *Alabama*
Course of Study:
Technology Education,
and other curriculum
materials, contact
Classroom

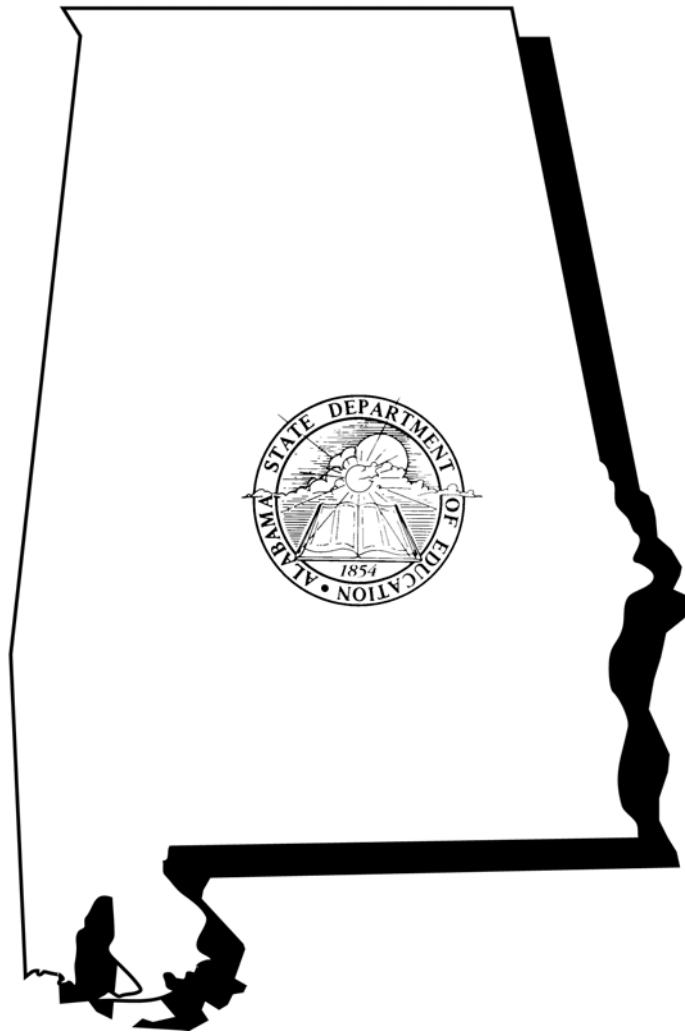
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Montgomery, Alabama, or by mail at
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Alabama Course of Study

Technology Education



Ed Richardson
State Superintendent of Education
ALABAMA DEPARTMENT OF EDUCATION
Bulletin 2002, No. 21

**STATE SUPERINTENDENT
OF EDUCATION'S MESSAGE**

Dear Educator:

The goal of the *Alabama Course of Study: Technology Education* (Bulletin 2002, No. 21) is technology literacy for all students. The information age in which Alabama students live is a challenging and ever-changing time in history. Alabama students must be provided with instruction that integrates the use of a variety of technologies for accessing information, sharpening problem-solving skills, and encouraging critical thinking. In the future, utilization of technology tools will enable students to function effectively whether the technology be used for productive work, enhanced communication, knowledge acquisition, or personal enjoyment.

Local school system teachers and administrators will notice that this new K-12 document contains a challenging set of standards to be mastered by students. Local school systems should develop local curriculum plans that incorporate these statements of what students should know and be able to do and make local decisions regarding how students will meet and perhaps go beyond the scope of these standards.

Local system leadership, school leadership, and effective classroom instruction will be the keys to students' success. Important local decisions include how students will accomplish these standards, in what sequence teachers will address them, and how much time will be given to the various components. These decisions are as significant as the identification of what students need to know and be able to do.

I sincerely support the K-12 technology curriculum for students as outlined in this course of study. I believe this document provides strong direction for a solid technology education program that will equip students with the necessary technological skills for the competitive global marketplace.

ED RICHARDSON
State Superintendent of Education

**MEMBERS
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Alabama Course of Study: Technology Education

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PREFACE

The *Alabama Course of Study: Technology Education* (Bulletin 2002, No. 21) provides the framework for the K-12 study of technology in Alabama's public schools. Content standards in this document define the minimum requirements according to *Code of Alabama* (1975), §16-35-4. They are fundamental and specific but not exhaustive. When developing local curriculum, school systems may include additional content standards to reflect local philosophies and may add implementation guidelines, resources, and/or activities.

The 2001-2002 Technology Education Task Force made extensive use of the *National Educational Technology Standards for Students—Connecting Curriculum and Technology*, published by the International Society for Technology. In addition, Task Force members reviewed *Professional Competency Continuum: Professional Skills for the Digital Age Classroom*, published by Milken Exchange on Educational Technology; *Apple Classroom of Tomorrow*, published by Apple Computers; and other states' technology curricula and read articles in professional journals and magazines during the development of the minimum required content.

Task Force members attended state and national conferences, listened to and read suggestions from interested individuals and groups throughout Alabama, and discussed each issue and standard among themselves. The Task Force reached consensus that the standards contained herein provide a sound technology curriculum for Alabama's students.

ACKNOWLEDGMENTS

The document was developed by the 2001-2002 Technology Education Task Force composed of early childhood, middle school, high school, and college educators appointed by the State Superintendent of Education. The Task Force began work in June 2001, and the State Board of Education approved this document at its February 2002 meeting.

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Roger Mac Adkins, Ed.D. provided the graphic illustration for the front cover and **Richard O. Murphy, Jr.** provided the graphic illustrations found within the document.

Alabama's K-12 Technology Education Curriculum

An Introduction

Alabama students live in one of the most exciting and ever-changing times in human history, the “information age.” Indeed, the information age may be as influential in directing the course of human advancement as was the industrial revolution. As educators, we must ensure that our students are active participants during this time of phenomenal human progress. Although technology is not a panacea for solving all instructional problems, it equips students with tools that have not existed in the past. Technology offers students opportunities and possibilities that would not exist without it. Alabama students should be at the forefront of exploring these technological opportunities and possibilities.

A technology literate student demonstrates basic technological operations and concepts; understands social, ethical, and human issues related to technology; and utilizes technology productivity, communication, research, and problem-solving skills. Technology literacy for all Alabama students is the goal of Alabama's K-12 technology education program. The *Alabama Course of Study: Technology Education* defines the **minimum required content** that students need for achieving technology literacy. Content standards in this document are minimum and required as specified in the *Code of Alabama* (1975), §16-35-4. They are fundamental but not exhaustive. In developing local curriculum, school systems may include additional content standards to reflect local philosophies and add implementation guidelines, resources, and/or activities, which, by design, are not contained in this document.

The *National Educational Technology Standards for Students* produced by the International Society for Technology in Education (ISTE) has established technology literacy as a national goal, and it continues to be a goal for Alabama students. Technology literacy enables students to use technology processes and products in everyday life to make informed decisions. A solid foundation in technology helps to develop and strengthen many of the skills that students use daily such as solving problems creatively, thinking critically, and working cooperatively in teams. The technologically literate person is more likely to face the challenges of a dynamic global society with confidence. Moreover, the economic productivity of Alabama is linked to the technological requirements of the workforce.

To help students achieve technology literacy and make informed decisions, the K-12 Technology Education program places a renewed emphasis on the importance of authentic integration of technology every day in every grade and subject.

Alabama's K-12 Technology Education Curriculum

The Conceptual Framework

Students use technology competencies as tools for learning across all content areas. Achieving the content standards in this document will provide the opportunity for students to become effective technology users by developing a knowledge base, building a repertoire of strategies, and applying these strategies in various contexts. The Conceptual Framework on page 4 is a graphic model of Alabama's K-12 technology program. The six strands as defined by the International Society for Technology in Education (ISTE) are: (1) basic operations and concepts, (2) social, ethical, and human issues, (3) technology productivity tools, (4) technology communications tools, (5) technology research tools, and (6) technology problem-solving and decision-making tools. Integrating these into meaningful classroom activities provides opportunities for students to obtain and communicate information, to respond to communication, to use technology for learning and reflecting, and to apply critical- and creative-thinking skills for solving problems. The division of the content into standards that support the overall goal of technology literacy provides assistance to teachers for planning technology-based activities.

Technology Foundation Standards for Students*

1. Basic operations and concepts
 - Students demonstrate a sound understanding of the nature and operation of technology systems.
 - Students are proficient in the use of technology.
2. Social, ethical, and human issues
 - Students understand the ethical, cultural, and societal issues related to technology.
 - Students practice responsible use of technology systems, information, and software.
 - Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
3. Technology productivity tools
 - Students use technology tools to enhance learning, increase productivity, and promote creativity.
 - Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.
4. Technology communications tools
 - Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
 - Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

5. Technology research tools
 - Students use technology to locate, evaluate, and collect information from a variety of sources.
 - Students use technology tools to process data and report results.
 - Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
6. Technology problem-solving and decision-making tools
 - Students use technology resources for solving problems and making informed decisions.
 - Students employ technology in the development of strategies for solving problems in the real world.

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TECHNOLOGY LITERACY



POSITION STATEMENTS

Scope of Content

The division of the content into standards that support the overall goal of technology literacy provides assistance to teachers for planning technology-based activities. Key components of the curriculum are knowing and applying technology issues and applications for a variety of purposes. The six major technology literacy strands as defined by the International Society for Technology in Education (ISTE) are (1) basic operations and concepts, (2) social, ethical, and human issues, (3) technology productivity tools, (4) technology communications tools, (5) technology research tools, and (6) technology problem-solving and decision-making tools. Integrating these strands into meaningful classroom activities provides opportunities for K-12 students to obtain and communicate information, to respond to communication, to use technology for learning and reflecting, and to apply critical- and creative-thinking skills for solving problems.

Integration Across the Curriculum

Technology is a *tool* for learning and increasing productivity. The technology content standards included in this document are designed to be used to enhance learning within and across all curricula. The Grades K-8 content standards are grouped into grade range clusters to be integrated across the curriculum. Although Grades 9-12 content standards are intended to be used for developing the required Computer Applications course, the Grades 9-12 standards in this section are also intended to be used as a guide for integrating technology across the curriculum.

The International Society for Technology in Education presents the curricular integration of technology as follows: “Curriculum integration with the use of technology involves the infusion of technology as a tool to enhance the learning in a content area or multidisciplinary setting. Technology enables students to learn in ways not previously possible. Effective integration of technology is achieved when students are able to select technology tools to help them obtain information in a timely manner, analyze and synthesize the information, and present it professionally. The technology should become an integral part of how the classroom functions—as accessible as all other classroom tools.” (*National Educational Technology Standards for Students*, p. 6)

Instructional Environment

When teachers create classroom communities characterized by equity and excellence, all students learn. These conditions are achieved when teachers hold high expectations for students regardless of technical, linguistic, religious, ethnic, or cultural backgrounds and create authentic learning activities that integrate technology competencies. Effective teachers use a variety of strategies to accommodate individual learning. Projects, mini-lectures, demonstrations, and cooperative small groups are some of the strategies that best facilitate students' acquisition of the knowledge, skills, and attitudes they need to become lifelong learners and effective technology users. In addition to traditional assessment tools, teachers use current research-based methods to authentically measure what students know and are able to do using technology. These methods include informal and formal observations, performance assessments, and student portfolios.

Lab Utilization

Although technology skills are best learned when technology is integrated across the curriculum, certain teaching tasks may be best accomplished in a computer lab setting. For example, students can utilize a lab to learn a software application. Occasionally, after classroom instruction, students need access to a computer for individual or project-based assignments with teachers as facilitators. A fully utilized computer laboratory provides a place for more than remedial or enrichment activities.

Computer labs are recommended for every school, although integration of technology into the classroom does not require a computer lab setting. In classrooms with one computer, placing the computer in a central location available to all learners is recommended. With three to five computers in the classroom, creating computer stations with two chairs around each computer is recommended. This arrangement encourages collaboration and cooperative learning. For greatest accessibility by students, computers are available for use in each classroom and in the library media center as well as in the computer lab.

Keyboard Utilization

Limited or no keyboarding skills may diminish a student's ability to operate a computer. It is not the intent of this document to advocate the teaching of keyboard utilization concepts in a formal keyboarding course. However, the keyboard is an important and efficient tool for inputting information into the computer.

Although exceptions exist, the suggested age for effective keyboard instruction is 10-12 years of age (Elementary/Middle School Keyboarding Strategies Guide, 1992). Keyboarding is a kinesthetic skill acquired through systematic, repetitive instruction in touch typing. To appropriately instruct students in keying skills, it is recommended that students be taught by a teacher who has knowledge of proper keyboarding techniques rather than solely relying on a software program for skill development. Repetitive drill and practice exercises are necessary for successful instruction. Sporadic access to a computer does not develop the needed level of skill for the student. Levels of keyboard utilization are included in each grade cluster of this document. Local school systems are encouraged to plan, design, and implement a scope and sequence plan for appropriate skill development.

Ergonomics

Ergonomic considerations are included as a focal point for instructing students in all grade clusters about proper posture and positioning while using computers. Correct and healthy techniques for the use of computers create good, healthy habits that reduce the risk of computer-related injuries.

Adjustable computer workstations are one option schools can use to ensure ergonomic concepts are employed. There are low-cost solutions for those schools on a nonexistent or small budget. Schools should provide students with comfortable and safe workstations. Teachers should help students develop good computer work habits and provide students with strategies to adjust computer workstations according to individual needs. Visuals demonstrating proper posture and positioning at a workstation and solutions for adjusting workstations to accommodate personal needs can be found in the grade cluster sections of this document.

Assessment

The content standards contained in this document have an impact on the assessment of technology instruction as well as on the assessment of student learning. Assessment should inform teachers not only of student competency levels but also of the adequacy of various instructional strategies.

Teachers use assessment data to plan instruction. During instruction, teachers collect additional data about student learning that direct revision of instructional strategies and guidance of student learning. Assessment techniques reflect learning that occurs at the cognitive, affective, and psychomotor levels. Consequently, the content standards in this document intertwine the knowledge, processes, and applications of technology. This intertwining of standards necessitates a variety of assessment methods to ensure that all students, including students with disabilities, acquire not only knowledge of technology but also skills of technology use. Assessment must go beyond simple paper-and-pencil tests to include skills-based assessment and the use of a variety of assessment instruments. These instruments should include multiple-choice items, pre- and post-exams of performance, checklists, open-ended essay items, journals, lab reports, creative dramatics, verbal explanations, portfolios, and projects.

Directions for Interpreting the Minimum Required Content

1. **CONTENT STANDARDS** are statements that define what students should know and be able to do. In this document, the curriculum content is listed as content standards. The order in which content standards are listed within a grade or course is not intended to convey a sequence for instruction. Content standards may address concepts or skills that will be addressed throughout the school year.
2. Content standards describe what students should know and be able to do at the conclusion of a grade or course. Each content standard contains a **STEM** that completes the phrase “Students will . . .”

Students will:

Demonstrate respect for the work of others.

(Grades K-2 – Content Standard 9)

3. Additional minimum required content may be listed under a content standard stem and is denoted by a bullet. This **ADDITIONAL CONTENT** provides further specificity for the standard.

Students will:

Identify legal and ethical behaviors when using information and technology.

- Copyright laws and fair use guidelines
- Acceptable use policy
- Internet use

(Grades 3-5 – Content Standard 8)

4. **EXAMPLES** clarify content standards. They do not provide an exhaustive list of the content that completes the stem. Examples clarify various portions of the stem or bulleted content.

Students will:

Utilize an operating system efficiently.

- Start up and shut down
- Menu items and commands/options
Examples: file, edit, view, help

(Computer Applications Course – Content Standard 4)

GRADES K-2 OVERVIEW

Five-, six-, and seven-year-olds are developing self-concepts, motor skills, and social relationships. They need opportunities for firsthand experiences in solving problems and manipulating real objects. Their vocabulary is expanding and they are learning at an exponential rate.

Young students learn best through exploration and interaction with peers and adults. Technology lends itself to this style of learning. Developmentally appropriate activities should be planned to provide students with opportunities to utilize technology skills as they accomplish curriculum objectives.

Multimedia Internet content provides broad experiences through video-clips, images, and sounds from around the world. Open-ended software allows students to practice problem solving in a safe environment. The use of interactive books sparks interest in reading and develops decoding and comprehension skills. Written and verbal expression is enhanced through multimedia slide show presentations; desktop publishing of students' creative writing; and videotaping of show and tell, drama, and poetry recitations. Students become accustomed to utilizing technology tools when technology is integrated into a variety of learning situations.

Effective teachers help students construct knowledge from information gathered from on-line curriculum projects, electronic databases, and other technology resources supported by productivity software such as graphing and drawing tools. Responsible use of hardware is modeled by the teacher and internalized by students at this early stage of their educational careers.

The inherent motivation created by computers and other technologies can be exploited by teachers to increase students' interest and excitement for learning while equipping them with technological tools that will enhance not only their formal educational years but also their professional and personal lives.

KINDERGARTEN-SECOND GRADE

By the end of second grade students will:

Basic Operations and Concepts

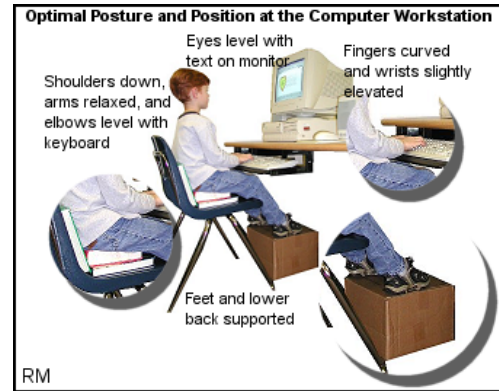
1. Demonstrate optimal posture and position at the computer workstation.
 - Eyes level with the text on the monitor
 - Shoulders down, arms relaxed
 - Elbows level with keyboard
 - Feet and lower back supported
 - Fingers curved
 - Wrists slightly elevated
2. Communicate about technology using developmentally appropriate and accurate terminology.

Examples: “press,” not “hit,” keys; open file, save
3. Identify the basic parts of a computer.

Examples: keyboard, monitor, printer
4. Use input, output, and storage devices to successfully operate computers, VCRs, audiotapes, and other technologies.

Examples: input–mouse, remote control;
output–monitor, printer, speakers, headphones;
storage–floppy disks, CDs
5. Use developmentally appropriate keyboard techniques.

Examples: left hand for left side keys and right hand for right side keys, special keys such as space bar, enter/return, backspace, shift, delete
6. Demonstrate correct procedures for opening, closing, and saving files using menu options and commands in grade-appropriate software.



Social, Ethical, and Human Issues

7. Demonstrate proper care of equipment and media.

Examples: clean hands, treatment of peripherals, clean work area, no magnets around computer station
8. Practice responsible use of technology systems and software.

Examples: using personal login, maintaining settings
9. Demonstrate respect for the work of others.

Technology Productivity Tools

10. Use a variety of media and technology resources for directed and independent learning activities across the curriculum.
Examples: word processor, drawing tools, learning software
11. Produce developmentally appropriate multimedia products.
Examples: autobiography or story using word processor or digital presentation software
12. Use electronic resources to access and retrieve information.
Examples: Alabama Virtual Library (AVL); multimedia dictionaries, encyclopedias, almanacs; electronic card catalog

Technology Communications Tools

13. Use telecommunications and other media to collaborate and interact with peers and other audiences, following appropriate laws and regulations.
Example: on-line curriculum projects such as describing the environment

Technology Research Tools

14. Identify the Internet as a resource for information.
15. Utilize information from a locally approved Internet web site.
Example: research project on dinosaurs, dental health, or rain forests

Technology Problem-Solving and Decision-Making Tools

16. Use technology resources for problem solving.
Examples: puzzles, logical thinking programs, solutions for a class-defined problem

GRADES 3-5 OVERVIEW

Students in Grades 3-5 begin to expand their horizons and exercise more independent thought and action. Many opportunities utilizing technology should be provided for students to work collaboratively to accomplish authentic tasks. Research conducted through on-line communities and interaction with experts in specialized fields of study sharpens skills needed across all curriculum areas, such as analysis of data, problem solving, reading for meaning, organizing information, and drawing conclusions. Students begin to use the World Wide Web more independently to conduct searches required for completing assignments. This naturally leads to discussions of legal and ethical use of information and judgments as to the value of information found on the Internet.

Activities using information drawn from the World Wide Web lend structure to projects while remaining open-ended enough to encourage critical thinking and allow for pursuit of individual student interests. Students at this age are becoming more literate regarding use of a variety of software applications that enable them to express themselves through original compositions and illustrations. A natural extension of this self-expression is publishing content for the World Wide Web, thereby allowing students to become a part of a greater community of learners.

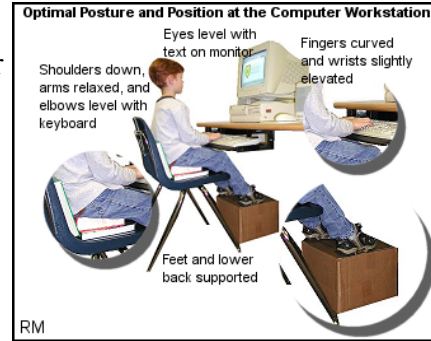
A technology-infused curriculum cultivates an atmosphere rich with motivation and interest in which students thrive intellectually and emotionally. Technology and academic skills mastered at this level provide the basis for future learning experiences.

THIRD GRADE-FIFTH GRADE

By the end of fifth grade students will:

Basic Operations and Concepts

1. Demonstrate optimal posture and position at the computer workstation.
 - Eyes level with the text on the monitor
 - Shoulders down, arms relaxed
 - Elbows level with keyboard
 - Feet and lower back supported
 - Fingers curved
 - Wrists slightly elevated
2. Communicate about technology using developmentally appropriate and accurate terminology.
3. Use common input and output devices efficiently and effectively.
4. Use developmentally appropriate keyboard techniques.
Example: home row finger placement
5. Describe correct procedures for troubleshooting simple hardware and software problems.
Examples: adding printer paper, rebooting system, following classroom troubleshooting guides



Social, Ethical, and Human Issues

6. Discuss common uses of technology in daily life and the advantages and disadvantages associated with each.
7. Discuss basic issues related to responsible use of technology and information including personal consequences of inappropriate use.
8. Identify legal and ethical behaviors when using information and technology.
 - Copyright laws and fair use guidelines
 - Acceptable use policy
 - Internet use
9. Identify areas in which technology has impacted human lives.
Examples: transportation, communication, nutrition, sanitation, health care, entertainment

Technology Productivity Tools

10. Demonstrate basic operations of a word processor.
 - Selecting text
 - Font type and size
 - Alignment
 - Line spacing
 - Tabs
 - Spell checker
 - Thesaurus
 - Graphics
11. Utilize general purpose productivity tools to facilitate learning throughout the curriculum.

Examples: authoring and presentation software, web tools, digital cameras, scanners
12. Use a variety of media and technology resources to create and communicate knowledge products across the curriculum.

Example: individual and collaborative writing, presenting, and publishing

Technology Communications Tools

13. Use telecommunications and other media to collaborate and interact with peers and other audiences following appropriate laws and regulations.

Example: on-line curriculum projects such as cultural exchanges, discussions with experts

Technology Research Tools

14. Use the Internet to locate information.

Examples: search engines, Alabama Virtual Library (AVL), on-line encyclopedias
15. Determine appropriate keywords for finding information using a web search.
16. Evaluate the relevance and appropriateness of electronic information sources.
17. Relate search results to class or individual assignments.

Technology Problem-Solving and Decision-Making Tools

18. Use technology resources for problem solving.
Examples: data, probability, and relationship analysis; science experimentation; expert opinion comparison
19. Select appropriate technology tools and resources to address a variety of tasks and problems.
Examples: Internet portals, calculators, software

GRADES 6-8 OVERVIEW

Students in Grades 6-8 possess a wide range of intellectual abilities, learning styles, talents, and interests. These students are going through a transitional period that includes physical, social, emotional, and intellectual changes. They are developing the skills to solve complex verbal and hypothetical problems.

In an increasingly information-oriented world, demands upon students to think on higher levels are steadily increasing. Technology tools help to augment and optimize their ability to process information. Students are provided with technological tools and knowledge needed to synthesize information from across the curriculum efficiently and appropriately.

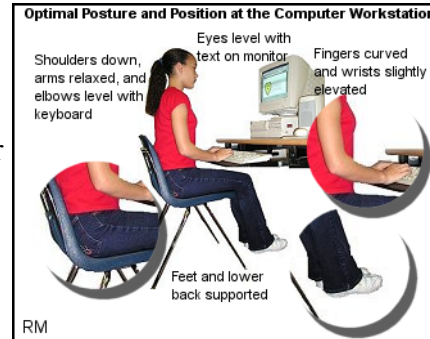
The technology content standards for Grades 6-8 are designed to complement all areas of the academic curriculum. The integration of technology enhances middle school students' emerging abilities to analyze, synthesize, and evaluate information. Students can use productivity/multimedia tools to demonstrate and communicate curriculum concepts to audiences more effectively. Students can also evaluate the accuracy, comprehensiveness, and bias of electronic information sources concerning real-world problems.

SIXTH GRADE-EIGHTH GRADE

By the end of eighth grade students will:

Basic Operations and Concepts

1. Demonstrate optimal posture and position at the computer workstation.
 - Eyes level with the text on the monitor
 - Shoulders down, arms relaxed
 - Elbows level with keyboard
 - Feet and lower back supported
 - Fingers curved
 - Wrists slightly elevated
2. Communicate regarding technology using developmentally appropriate and accurate terminology.
3. Demonstrate keyboarding proficiency in technique and posture while building speed.
4. Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use.
5. Utilize an operating system efficiently.
Examples: proper shut down, file management



Social, Ethical, and Human Issues

6. Describe current changes in information technologies and the effect those changes have on the workplace and society.
7. Analyze ways in which technology has influenced the course of history.
Examples: revolutions in agriculture, manufacturing, medicine, warfare, transportation, communication
8. Identify examples of copyright violations, computer fraud, and possible penalties.
Examples: unauthorized use, computer hacking, software piracy, virus dissemination, fines
9. Cite electronic sources properly.
Example: using MLA or APA style manuals

Technology Productivity Tools

10. Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration, communication, and learning throughout the curriculum.
11. Follow procedures to design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom.
Examples: web pages, videotapes
12. Integrate word processing skills across the curriculum.
Examples: reports, letters, brochures
13. Identify examples of spreadsheets and databases.
Examples: spreadsheets—budgets, checkbook; databases—phone book, recipe book
14. Identify uses of spreadsheets and databases.
Examples: spreadsheets—discover patterns, track spending; databases—manage data

Technology Communications Tools

15. Use telecommunications and other media to collaborate and interact with peers and other audiences following appropriate laws and regulations.
Example: on-line curriculum projects such as cost of living comparison

Technology Research Tools

16. Apply content-specific tools, software, and simulations to support learning and research.
Examples: environmental probes, graphing calculators, exploratory environments, web tools including AVL
17. Evaluate the accuracy, comprehensiveness, and bias of electronic information sources concerning real-world problems.
18. Use Boolean operators to execute complex searches.
Examples: AND, NOT, +, -

Technology Problem-Solving and Decision-Making Tools

19. Use appropriate tools and technology resources to resolve information conflicts by validating information through research and comparison of data.
Example: defending a position on political or social issues

GRADES 9-12 OVERVIEW

Students in Grades 9-12 experience significant growth and development as they assume more complex responsibilities such as working and making career choices. They are continuing to develop unique personalities and are making important life decisions. High school students are developing and practicing leadership and interpersonal communication skills in the school and community that facilitate entrance into adulthood. They continue to experience physical and emotional changes as well as to seek opportunities for developing independence and individuality.

Grades 9-12 students have broadened their perspective regarding the importance of existing and developing technologies and have an understanding of the scope of technology in today's world. As students progress through the high school years, they are able to address a variety of problems on a variety of topics in a logical manner. Technology offers students an efficient means by which many types of problems may be solved.

Because of cultural and ideological diversity in a technologically advanced global society, many students have opportunities to interact with others whose backgrounds are different from their own. As the use of technology brings humankind closer together, concepts and skills addressed in the Computer Applications course will assist students in developing the ability to respect differences and to develop skills necessary for becoming productive adults.

The Computer Applications course is designed to provide students with the basic concepts and skills regarding knowledge of computer operations. Additional components of the course are responsible use of computers, efficient use of computers to enhance productions and presentations, and use of computers to access information. Competent computer utilization fosters students' problem-solving and critical-thinking skills and enables students to become competitive workers in the twenty-first century.

The content standards in this course are designed around content organizers that emphasize hands-on, practical activities that extend beyond the computer classroom or laboratory. Course content should be integrated into other curricular areas to allow students to reinforce and expand technology competencies. As students become proficient users of computers and other technologies in the classroom, the benefits of using these tools for researching, analyzing, and synthesizing information beyond the classroom become evident. Technology literate students realize that technology tools and resources enhance not only educational endeavors but also personal and professional success as well.

COMPUTER APPLICATIONS

BASIC OPERATIONS AND CONCEPTS

Students will:

Terminology

1. Utilize appropriate vocabulary to communicate effectively in a technological society.

Computer Hardware

2. Identify computer hardware components and peripheral devices.
Examples: CPU, monitor, printer, digital camera, scanners
3. Appraise computer hardware to determine software compatibility.
Examples: RAM, processing speed, hard drive, video card

Operating Systems

4. Utilize an operating system efficiently.
 - Start up and shut down
 - Menu items and commands/options
Examples: file, edit, view, help
5. Differentiate among operating systems.

Networking

6. Describe uses of a networked computer.
Examples: security, file sharing, collaboration, centralized database
7. Assess the impact of networks on society.

File Management

8. Identify advantages of creating an organized file structure.
9. Arrange an organized file structure.
10. Modify file structure.
11. Identify various storage and backup options.
Examples: floppy disks, CD-RW, DVD, network folders

Basic Trouble Shooting

12. Apply strategies for identifying and solving routine hardware and software problems that occur in everyday use.
Examples: checking plug, switch, connections, video, and sound; rebooting, using help sources

SOCIAL, ETHICAL, AND HUMAN ISSUES

Information Ownership

13. Interpret copyright laws and policies with regard to ownership and use of information.
 - Obtaining permission to use electronic media sources/products
 - Determining considerations necessary to use electronic media sources/products
Examples: fair use (educational and personal), software licensing
 - Explaining consequences of copyright violations

Responsible Use

14. Identify unethical behaviors regarding use of technology.
Examples: hacking, spreading viruses, threats, unauthorized access
15. Explain consequences of the misuse of technology.
16. Evaluate the accuracy, appropriateness, and bias of electronic information.
17. Cite electronic sources properly.
Example: using MLA or APA style manuals
18. Recognize practices that are not in keeping with netiquette.
Examples: slamming, spamming, flaming

Implications of Technology Use

19. Identify factors that affect access to technology.
Examples: socio-economic level, political climate, geographic location
20. Explain types of tasks for which technology may be used in school, home, and business.
Examples: E-learning, E-commerce, telecommuting
21. Evaluate the effect technology has on the workplace and society.
Examples: improved communication, increased productivity

TECHNOLOGY PRODUCTIVITY TOOLS

Word Processing

22. Explain uses and advantages of word processing.
23. Apply appropriate techniques for producing word processing documents.
 - Creating and opening documents
 - Using *save* and *save as*
 - Using print options
Examples: preview, entire file, selected parts
 - Formatting text, paragraphs, and pages
Examples: text justification, indents, line spacing, tabs, margins, headers, footers, pagination, page orientation
 - Cutting, copying, pasting, and deleting text
 - Using *spell check* and *thesaurus* features
 - Using *find* and *replace* features

Spreadsheets

24. Explain uses and advantages of spreadsheets.
25. Apply appropriate techniques for producing spreadsheets.
 - Creating and opening documents
 - Using *save* and *save as*
 - Using print options
Examples: preview, entire file, selected parts
 - Identifying columns and rows
 - Setting cell attributes
 - Entering data
 - Editing data
 - Creating formulas
 - Using functions
 - Sorting data
 - Filtering data
 - Creating charts

Databases

26. Explain uses and advantages of databases.
27. Apply appropriate techniques for producing databases.
 - Planning data structure
 - Creating and opening documents
 - Using *save* and *save as*
 - Using print options
Examples: preview, entire file, selected parts
 - Naming fields
 - Setting field attributes
 - Entering data
 - Editing data
 - Sorting data
 - Filtering data
 - Querying data
 - Merging data
 - Creating and printing reports

Multimedia Authoring

28. Explain uses, advantages, and options of multimedia authoring.
29. Apply appropriate techniques for producing multimedia products.
Examples: brochures, newspapers, slide presentations, web pages, digital or video presentations

TECHNOLOGY COMMUNICATIONS TOOLS

Communications Applications

30. Explain uses and advantages of telecommunications.
31. Explain ways technology is used for transfer of information.
Examples: E-mail, listserv, video conferencing, Internet
32. Demonstrate ways technology is used for transfer of information.
 - E-mail
 - Internet

Presentations

33. Demonstrate proficiency in presenting digital information.
Example: web pages, video segments, multimedia presentations, publications

TECHNOLOGY RESEARCH TOOLS

Digital Media

34. Use appropriate on-line resources for research.
Examples: on-line databases, electronic card catalog, search engines, AVL
35. Apply appropriate techniques for information retrieval.
- Boolean operators
Examples: AND, NOT, +, -
 - Key words
36. Identify useful information from a search.
37. Take notes and paraphrase from a search.

TECHNOLOGY PROBLEM-SOLVING AND DECISION-MAKING TOOLS

37. Utilize technology for solving problems and making data-driven decisions.
Examples: assembling a plan for purchasing a computer given a basic set of circumstances, making projections

APPENDIX A

Alabama High School Graduation Requirements

(Alabama Administrative Code 290-3-1-02(8)(a) (b) and (c))

1. COURSE REQUIREMENTS

The Alabama courses of study shall be followed in determining minimum required content in each discipline. Students seeking the Alabama High School Diploma with Advanced Academic Endorsement shall complete advanced level work in the core curriculum. Students seeking the Alternate Adult High School Diploma shall complete the prescribed credits for the Alabama High School Diploma and pass the test of General Education Development (GED).

COURSE REQUIREMENTS	Alabama High School Diploma Credits	Alabama High School Diploma with Advanced Academic Endorsement Credits	Alternate Adult High School Diploma Credits
ENGLISH LANGUAGE ARTS	4	4	4
Four credits to include the equivalent of:			
English 9	1	1	1
English 10	1	1	1
English 11	1	1	1
English 12	1	1	1
MATHEMATICS	4	4	4
Four credits to include the equivalent of:			
Algebra I	1	1	1
Geometry	1	1	1
Algebra II with Trigonometry	1	1	1
Mathematics Elective(s)	2	1	2
SCIENCE	4	4	4
Four credits to include the equivalent of:			
Biology	1	1	1
A physical science	1	1	1
Science Electives	2	2	2
SOCIAL STUDIES*	4	4	4
Four credits to include the equivalent of:			
Grade 9 Social Studies	1	1	1
Grade 10 Social Studies	1	1	1
Grade 11 Social Studies	1	1	1
Grade 12 Social Studies	1	1	1
PHYSICAL EDUCATION	1	1	1
HEALTH EDUCATION	0.5	0.5	0.5
ARTS EDUCATION	0.5	0.5	0.5
COMPUTER APPLICATIONS**	0.5	0.5	0.5
FOREIGN LANGUAGE***		2	
ELECTIVES	5.5	3.5	5.5
Local boards shall offer foreign languages, fine arts, physical education, wellness education, career/technical education, and driver education as electives.			
TOTAL CREDITS	24	24	24

* All four required credits in Social Studies shall comply with the current *Alabama Course of Study*.

- ** May be waived if competencies outlined in the computer applications course are demonstrated to qualified staff in the local school system. The designated one-half credit shall then be added to the electives credits, making a total of six electives credits.
- *** Students earning the diploma with the advanced academic endorsement shall successfully complete two credits in the same foreign language.

2. ASSESSMENT REQUIREMENTS

Pass the required statewide assessment for graduation.

Alabama High School Graduation Requirements (continued)

(Alabama Administrative Code 290-3-1-02(8)(g))

1. COURSE REQUIREMENTS

Effective for students with disabilities as defined by the Individuals with Disabilities Education Act (Public Law 101-476) who begin the tenth grade in the 1997-98 school year, students must earn the course credits outlined in Ala. Admin. Code r. 290-3-1-.02(8)(g)1. and successfully complete an approved occupational portfolio in order to be awarded the Alabama Occupational Diploma.

COURSE REQUIREMENTS	Alabama Occupational Diploma Credits
ENGLISH LANGUAGE ARTS	4
Four credits to include the equivalent of: Employment English I Employment English II Employment English III Applied Employment English IV	1 1 1 1
MATHEMATICS	4
Four credits to include the equivalent of: Job Skills Math I Job Skills Math II Job Skills Math III Applied Job Skills Math IV	1 1 1 1
SCIENCE	4
Four credits to include the equivalent of: Life Skills Science I Life Skills Science II Life Skills Science III Applied Life Skills Science IV	1 1 1 1
SOCIAL STUDIES	4
Four credits to include the equivalent of: Career Preparation I Career Preparation II Career Preparation III Applied Career Preparation IV	1 1 1 1
CAREER/TECHNICAL EDUCATION	2
*Cooperative Career/Technical Education	1
HEALTH EDUCATION	0.5
PHYSICAL EDUCATION	1
ARTS EDUCATION	0.5
ELECTIVES	3
Existing laws require LEAs to offer arts education, physical education, wellness education, career/technical education, and driver education as electives.	
TOTAL CREDITS	24

*May be a part of the two credits for Career/Technical Education. The designated one credit for Cooperative Education will then be added to the electives, making a total of four electives.

2. ASSESSMENT REQUIREMENTS

Complete successfully an approved Alabama Occupational Diploma Portfolio for graduation.

APPENDIX B

Guidelines and Suggestions for Local Time Requirements and Homework

Total Instructional Time

The total instructional time of each school day in all schools and at all grade levels shall be not less than 6 hours or 360 minutes, exclusive of lunch periods, recess, or time used for changing classes (§16-1-1 *Code of Alabama*).

Suggested Time Allotments for Grades 1 - 6

The allocations below are based on considerations of a balanced educational program for Grades 1-6. Local school systems are encouraged to develop a general plan for scheduling that supports interdisciplinary instruction. Remedial and/or enrichment activities should be a part of the time schedule for the specific subject area.

<u>Subject Area</u>	<u>Grades 1-3</u>	<u>Grades 4-6</u>
Language Arts	150 minutes daily	120 minutes daily
Mathematics	60 minutes daily	60 minutes daily
Science	30 minutes daily	45 minutes daily
Social Studies	30 minutes daily	45 minutes daily
Physical Education	30 minutes daily*	30 minutes daily*
Health	60 minutes weekly	60 minutes weekly
Computer Education	60 minutes weekly	60 minutes weekly
Character Education	10 minutes daily	10 minutes daily
Arts Education	<i>Daily instruction with Arts specialists in each of the Arts disciplines is the most desirable schedule. However, schools unable to provide daily Arts instruction in each discipline are encouraged to schedule in Grades 1 through 3 two 30- to 45-minute Arts instruction sessions per week and in Grades 4 through 6 a minimum of 60 minutes of instruction per week. Interdisciplinary instruction within the regular classroom setting is encouraged as an alternative approach for scheduling time for Arts instruction when Arts specialists are not available.</i>	
Dance		
Music		
Theatre		
Visual Arts		

* Established by the State Department of Education in accordance with *Code of Alabama* (1975), §16-40-1

Kindergarten

In accordance with *Alabama Administrative Code* r. 290-5-1-.01(5) Minimum Standards for Organizing Kindergarten Programs in Alabama Schools, the daily time schedule of the kindergartens shall be the same as the schedule of the elementary schools in the systems of which they are a part since kindergartens in Alabama operate as full-day programs. There are no established time guidelines for individual subject areas for the kindergarten classroom. The emphasis is on large blocks of time that allow children the opportunity to explore all areas of the curriculum in an unhurried manner.

In accordance with *Alabama Administrative Code* r. 290-5-1-.01(6), the official guide for program planning in kindergarten is *Alabama Kindertartens*, Bulletin 1987, No. 28. Criteria to be used in scheduling are listed on pages 45-46 of this guide. The full-day program should be organized utilizing large blocks of time for large group, small groups, center time, lunch, outdoor activities, snacks, transitions, routines, and afternoon review. Individual exploration, small-group interest activities, interaction with peers and teachers, manipulation of concrete materials, and involvement in many other real-world experiences are needed to provide a balance in the kindergarten classroom.

Grades 7-12

A minimum of 140 clock hours of instruction is required for one unit of credit and a minimum of 70 clock hours of instruction is required for one-half unit of credit.

In those schools where Grades 7 and 8 are housed with other elementary grades, the school may choose the time requirements listed for Grades 4-6 or those listed for Grades 7-12.

Character Education

For all grades, not less than 10 minutes instruction per day shall focus upon the students' development of the following character traits: courage, patriotism, citizenship, honesty, fairness, respect for others, kindness, cooperation, self-respect, self-control, courtesy, compassion, tolerance, diligence, generosity, punctuality, cleanliness, cheerfulness, school pride, respect of the environment, patience, creativity, sportsmanship, loyalty, and perseverance.

Homework

Homework is an important component of every student's instructional program. Students, teachers, and parents should have an understanding of homework objectives and their role in the total learning experience. Homework reflects practices that have been taught in the classroom and provides reinforcement and/or remediation for students. Homework should be student-managed, and the amount should be age-appropriate. Homework should encourage learning through problem solving and practice. Parental support and supervision reinforce the quality of practice or product as well as skill development.

Each local board of education shall establish a policy on homework consistent with the State Board of Education resolution adopted February 23, 1984. (Action Item #F-2)

Homework is an important component of each student's instructional program. Students, teachers, and parents should have a clear understanding of the objectives to be accomplished through homework and the role it plays in meeting curriculum requirements. At every grade level, homework should be meaning-centered and mirror classroom activities and experiences. Independent and collaborative projects that foster creativity, problem-solving abilities, and student responsibility are appropriate.

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Florida – Source: Florida Department of Education Curriculum Framework: 2003

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July 2003

**Florida Department of Education
CURRICULUM FRAMEWORK**

Program Title: Business Keyboarding
Occupational Area: Business

Secondary

Program Numbers **8200110**
CIP Number 0507.99990R
Grade Level 6-9, 30, 31
Standard Length .50 credit
Certification BUS ED @4 1 @2
TEACH CBE @7
VOE @7

- I. **MAJOR CONCEPTS/CONTENT:** This course is designed to provide instruction in keyboarding for business applications. These competencies provide the skills necessary to ensure increased productivity and efficient utilization of equipment.
- II. **LABORATORY ACTIVITIES:** Laboratory activities are an essential part of this course. This course has been designed as a hands-on class. It is essential that technology, specifically computers and software, be made available to students in this course.
- III. **SPECIAL NOTE:** Activities including field trips and the use of guest presenters from the business community are appropriate for this course.
- IV. **INTENDED OUTCOMES:** After successfully completing this course, the student will be able to:
- 01.0 Develop keyboarding skills utilizing current technology.
 - 02.0 Apply keyboarding skills utilizing current technology.
 - 03.0 Explore business career opportunities.

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Program Title: Business Keyboarding
Secondary Number: 8200110
Postsecondary Number:

01.0 DEVELOP KEYBOARDING SKILLS UTILIZING CURRENT TECHNOLOGY--The student will be able to:

- 01.01 Demonstrate proper keyboarding techniques. LA.C.1.1
- 01.02 Demonstrate keyboarding skills necessary for increased productivity. LA.C.1.1, LA.C.1.3.1, LA.B.2.3.4

02.0 APPLY KEYBOARDING SKILLS UTILIZING CURRENT TECHNOLOGY--The student will be able to:

- 02.01 Perform word processing activities. LA.A.2.3.5, LA.C.1.3.1, LA.D.2
- 02.02 Key activities relating to cultural diversity.
- 02.03 Apply keyboarding skills to interdisciplinary activities. LA.B.2.3.4, LA.B.2.3.4

03.0 EXPLORE BUSINESS CAREER OPPORTUNITIES--The student will be able to:

- 03.01 Research business careers.LA.B.1.3
- 03.02 Apply problem-solving skills to the research of business careers. LA.A.1.3, LA.A.2.3,

**Florida Department of Education
CURRICULUM FRAMEWORK**

Program Title: Keyboarding and Business Skills
Program Type: Practical Arts
Occupational Area: Business Technology Education

Secondary

Program Number: 8200320
CIP Number: 0507.0798PA
Grade Level: 9-12, 30, 31
Standard Length: .5 credits
Certification: BUS ED @4 1 @2
VOE @7
TEACH CBE @7
STENOG @4
TYPEWRIT @4
CLERICAL @7 G
SECRETAR @7 G
CTSO: FBLA
BPA
Coop Method: No
Apprenticeship: No
Facility Code: 211

- I. **PURPOSE:** This course is designed to provide a basic overview of current business and information systems and trends and to introduce students to the basics and foundations required for today's business environments. Emphasis is placed on developing proficiency with touch keyboarding and fundamental word processing applications, so that they may be used as communication tools for enhancing personal and work place proficiency in an information-based society.

Instructional experiences provided in this course do not necessarily prepare students for specific occupations.

- II. **LABORATORY ACTIVITIES:** Laboratory activities are an integral part of this course and include the use of computers and peripheral equipment.
- III. **SPECIAL NOTES:** Future Business Leaders of America (Secondary), Phi Beta Lambda (Postsecondary), and Business Professionals of America (BPA) are the appropriate Career and Technical Student Organizations (CTSO) for providing leadership training and for reinforcing specific career and technical skills. Career and Technical Student Organizations, when provided, shall be an integral part of the career and technical instructional program, and the activities of such organizations are defined as part of the curriculum in accordance with Rule 6A-6.065, FAC.

Federal and state legislation requires the provision of accommodations for students with disabilities to meet individual needs and ensure equal access. Adult students with disabilities must self-identify and request such services. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands

and schedules learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

SCANS Competencies: Instructional strategies for this program must include methods that require students to identify, organize, and use resources appropriately; to work with each other cooperatively and productively; to acquire and use information; to understand social, organizational, and technological systems; and to work with a variety of tools and equipment. Instructional strategies must also incorporate the methods to improve students' personal qualities and high-order thinking skills.

Equipment List: A generic equipment list is available for this program.

IV. **INTENDED OUTCOMES:** After completing the following competencies, the student will be able to:

- 01.0 Demonstrate knowledge, skill, and application of information systems to accomplish job objectives and enhance workplace performance. Apply ergonomic principles applicable to the configuration of computer workstations. [Student Performance Standards: 01.01, 01.02, 01.05.]
- 02.0 Use technology to apply and enhance communication skills in technical reading, writing, speaking, listening, and viewing. [Student Performance Standards: 02.01, 02.02, 02.03, 02.04, 02.05.]
- 03.0 Use technology to apply and enhance communication skills in technical reading, writing. [Student Performance Standards: 03.01, 03.02, 3.04, 03.06.]
- 04.0 Develop an awareness of management functions and organizational structures as they relate to today's workplace and employer/employee roles. Demonstrate initiative, courtesy, loyalty, honesty, cooperation and punctuality as a team member. [Student Performance Standards: 04.01, 04.02, 04.03.]
- 05.0 Practice quality performance in the learning environment and the workplace. [Student Performance Standards: 05.01, 05.02.]
- 06.0 Incorporate appropriate leadership and supervision techniques, customer service strategies, and standards of personal ethics to accomplish job objectives and enhance workplace performance. [Student Performance Standards: 06.01, 06.02, 06.03.]
- 09.0 Incorporate knowledge gained from individual assessment and job/career exploration to design an individual career plan that reflects the transition from school to work, lifelong learning, and personal and professional goals. Experience work-based learning through job shadowing, mentoring, e-coaching, etc. [Student Performance Standards: 11.01, 11.02, 11.03, 11.04.]
- 10.0 Demonstrate personal and interpersonal skills appropriate for the workplace. [Student Performance Standards: 10.01, 10.02, 10.03.]
- 13.0 Perform office functions and responsibilities to accomplish job objectives and enhance workplace performance. [Student Performance Standards: 13.01, 13.02.]

**Florida Department of Education
STUDENT PERFORMANCE STANDARDS**

Course Number: 8200320
Course Title: Keyboarding and Business Skills
Course Credit: .5

COURSE DESCRIPTION:

This course is designed to provide a basic overview of current business and information systems and trends and to introduce students to the basics and foundations required for today's business environments. Emphasis is placed on developing proficiency with touch keyboarding and fundamental word processing applications, so that they may be used as communication tools for enhancing personal and work place proficiency in an information-based society.

INFORMATION SYSTEMS

01.0 DEMONSTRATE KNOWLEDGE, SKILL, AND APPLICATION OF INFORMATION SYSTEMS TO ACCOMPLISH JOB OBJECTIVES AND ENHANCE WORKPLACE PERFORMANCE. APPLY ERGONOMIC PRINCIPLES APPLICABLE TO THE CONFIGURATION OF COMPUTER WORKSTATIONS—The student will be able to:

- 01.01 Develop keyboarding skills to enter and manipulate text and data. (LA.B.1.4.3)
- 01.02 Describe and use current and emerging computer technology and software to perform personal and business related tasks. (LA.B.2.4.4)
- 01.05 Demonstrate basic file management skills. LA.A.2.4.2, LA.B.2.4.4, LA.B.2.4.6

WORKPLACE COMMUNICATIONS

02.0 USE TECHNOLOGY TO APPLY AND ENHANCE COMMUNICATION SKILLS IN TECHNICAL READING, WRITING, SPEAKING, LISTENING, AND VIEWING—The student will be able to:

- 02.01 Select and use appropriate modes of communication for specific job and work situations. LA.B.2.4.4
- 02.02 Organize ideas and communicate oral and written messages appropriate to listeners and situations in workplace and business environments. LA.B.2.4.2
- 02.03 Use listening, speaking, and nonverbal skills and strategies to communicate effectively with supervisors, co-workers, and customers. LA.C.1.4.1, LA.C.3.4.1, HE.3.4.1
- 02.04 Select and use standard written business communication formats. LA.B.1.4.1, LA.B.1.4.3
- 02.05 Use professional business vocabulary appropriate for entry-level jobs in business environments. LA.A.1.4.3

03.0 USE TECHNOLOGY TO APPLY AND ENHANCE COMMUNICATION SKILLS IN TECHNICAL READING, WRITING—The student will be able to:

- 03.01 Select and use word processing software and accompanying features to enhance written

business communications. LA.B.1.4.1

03.02 Use the writing process to create/edit business documents appropriate to the subject matter, purpose, and audience. LA.B.1.4.1, LA.B.1.4.2, LA.B.1.4.3

03.06 Respond to and utilize information derived from multiple sources (e.g., written documents, instructions, e-mail, voice mail) to solve business problems and complete business tasks.

MANAGEMENT

04.0 DEVELOP AN AWARENESS OF MANAGEMENT FUNCTIONS AND ORGANIZATIONAL STRUCTURES AS THEY RELATE TO TODAY'S WORKPLACE AND EMPLOYER/EMPLOYEE ROLES. DEMONSTRATE INITIATIVE, COURTESY, LOYALTY, HONESTY, COOPERATION AND PUNCTUALITY AS A TEAM MEMBER—The student will be able to:

04.01 Explore, design, implement, and evaluate organizational structures and cultures for managing project teams.

04.02 Explore and demonstrate an awareness of current trends in business and the employee's role in maintaining productive business environments in today's global workplace.

04.03 Collaborate with individuals and teams to complete tasks and solve business-related problems and demonstrate initiative, courtesy, loyalty, honesty, cooperation, and punctuality as a team member.

CURRENT TRENDS/ISSUES IN THE WORKPLACE

05.0 PRACTICE QUALITY PERFORMANCE IN THE LEARNING ENVIRONMENT AND THE WORKPLACE—The student will be able to:

05.01 Assess personal, peer, and group performance and identify and implement strategies for improvement (e.g., organizational skills, note taking/outlining, advance organizers, reasoning skills, problem-solving and decision-making skills).

05.02 Develop criteria for assessing products and processes that incorporate effective business practices (e.g., time management, productivity, total quality management).

MANAGEMENT

06.0 INCORPORATE APPROPRIATE LEADERSHIP AND SUPERVISION TECHNIQUES, CUSTOMER SERVICE STRATEGIES, AND STANDARDS OF PERSONAL ETHICS TO ACCOMPLISH JOB OBJECTIVES AND ENHANCE WORKPLACE PERFORMANCE—The student will be able to:

06.01 Demonstrate an awareness of quality service and the personal and professional standards required to establish an effective service-based culture in the workplace, business, or learning environment.

06.02 Identify, analyze, and implement managerial skills necessary for maintaining a high quality work environment, goals, and strategic planning in business settings.

06.03 Follow accepted rules, regulations, policies, procedures, processes, and workplace safety.

JOB READINESS AND CAREER DEVELOPMENT

09.0 INCORPORATE KNOWLEDGE GAINED FROM INDIVIDUAL ASSESSMENT AND JOB/CAREER EXPLORATION TO DESIGN AN INDIVIDUAL CAREER PLAN THAT REFLECTS THE TRANSITION FROM SCHOOL TO WORK, LIFELONG LEARNING, AND PERSONAL AND PROFESSIONAL GOALS. EXPERIENCE WORK-BASED LEARNING THROUGH JOB SHADOWING, MENTORING, E-COACHING, ETC. —The student will be able to:

- 09.01 Analyze personal skills and aptitudes in comparison with various business related job and career options.
- 09.02 Use career resources to develop an information base that reflects local and global business related occupations and opportunities for continuing education and workplace experience.
- 09.03 Demonstrate job-seeking skills required for entry-level employment (e.g., resume, application, interview, follow up.) LA.C.3.4.4
- 09.04 Design, initiate, refine, and implement a plan to facilitate personal growth and skill development related to anticipated job requirements and career expectations.

HUMAN RELATIONS/INTERPERSONAL SKILLS

10.0 DEMONSTRATE PERSONAL AND INTERPERSONAL SKILLS APPROPRIATE FOR THE WORKPLACE—The student will be able to:

- 10.01 Accept constructive criticism. SS.B.1.4.5
- 10.02 Apply appropriate strategies to manage and resolve conflict in work situations. LA.D.1.4.2, SS.B.1.4.5, HE.B.3.4.5
- 10.02 Demonstrate personal and interpersonal skills appropriate for the workplace (e.g., responsibility, dependability, punctuality, integrity, positive attitude, initiative, and respect for self and others, professional dress, etc.).

ADMINISTRATIVE OFFICE PROCEDURES

13.0 PERFORM OFFICE FUNCTIONS AND RESPONSIBILITIES TO ACCOMPLISH JOB OBJECTIVES AND ENHANCE WORKPLACE PERFORMANCE—The student will be able to:

- 13.01 Perform business tasks (e.g., filing and records management, scheduling, reprographics, mail handling, etc.). LA.A.2.4.4, LA.A.2.4.7, LA.A.2.4.8, LA.B.2.4.2
- 13.02 Demonstrate knowledge of ethical behavior in a business environment (e.g., confidentiality of information, employee right to know, hiring practices, plagiarism, copyright violations, sexual harassment, mission statement, code of ethics, etc.).

NOTE: This course along with Computer and Business Skills is equivalent to Business Systems and Technology 1. Students should complete this course before enrolling in Computer and Business Skills.

Georgia – Sources:

http://www.doe.k12.ga.us/documents/curriculum/edtech/bit_6.pdf

Business Information Technology 6-8

Standard III: Business, Marketing, and Information Technology middle school students in Georgia will understand, apply, or assess proper keyboarding techniques.

Instructional Time: 6 hours

Objectives	Suggested Activities	Tech/Career Core	Related QCC
1) The students will be able define keyboarding terms.	1) The teacher will divide the students into groups of four. The groups will review keyboarding terms. After the review, groups will compete in the game Keyboarding Wheel of Fortune. (See Appendix III.1.6.) 2) The teacher will display an oversized keyboard on the floor or in another area large enough to accommodate the activity. The teacher will align students facing the keyboard. The teacher will call out one keyboarding term at a time. Students will jump to the correct key position.		
2) The students will be able to use correct keystroking technique for the alphabetic keys.	1) The teacher will demonstrate the correct keystroking technique for alphabetic keys. The teacher will divide the students into groups of two. Each group will use a computer to complete the Story Starter exercise. (See Appendix III.2.6.) 2) The teacher will review the correct keystroking technique for the alphabetic keys. The students will complete the Creature Feature exercise. (See Appendix III.3.6.)		
3) The students will be able to use correct keystroking technique for the number keys.	1) The teacher will demonstrate the correct keystroking technique for the number keys. The teacher will divide the students into groups. The groups will play Numbers Trivial Pursuit. (See Appendix III.4.6.) 2) The teacher will review the correct keystroking technique for the		

	number keys. The students will complete the Your Guess Is As Good As Mine exercise. (See Appendix III.5.6.)		
4) The students will be able to use correct keystroking technique for the symbol keys.	1) The teacher will demonstrate the correct keystroking technique for the symbol keys. The students will complete the Symbol Art exercise. (See Appendix III.6.6.) 2) The teacher will review the correct keystroking technique for the symbol keys. The students will key the correct Emoticon, using the symbol keys. (See Appendix III.7.6.)		
5) The students will be able to operate the numeric keypad.	1) The teacher will set up a merchandise table containing a variety of school supplies that are labeled and priced. Students will be given a budget of \$5.00, a shopping bag, and time to shop. Students are required to spend exactly \$5.00. The students will return to their computers and key both the item name and the numerical value. Students who stay within budget and properly key the items will be allowed to keep their merchandise. 2) Students will keep a Daily Research Log for a numeric subject. The students will select from the choices on the Daily Research Log. (See Appendix III.8.6.)		

Kentucky – Source: Business Education 2003

http://www.kentuckyschools.net/cgi-bin/MsmGo.exe?grab_id=101436984&EXTRA_ARG=&host_id=1&page_id=4894&query=Business+Education

BUSINESS EDUCATION

Course Title	Recommended Grade Level									Recommended Credit
	4	5	6	7	8	9	10	11	12	
Business Economics**						x	x	x	x	½ - 1
Touch Keyboarding for 4-6 th Grade	x	x	x							N/A
Business and Marketing Career Exploration				x	x	x				1
Exploratory Computers				x						1
Keyboarding Applications					x	x				1
Computer and Technology Applications						x	x	x	x	1
Advanced Computer Applications							x	x	x	1-3
Mathematics for Business and Industry						x	x	x		1
Business Principles and Applications						x	x			1
Accounting I						x	x	x		1
Accounting II*							x	x	x	1-3
Financial Services I*							x	x	x	1-3
Financial Services II*								x	x	1-3
Advanced Finance and Credit*								x	x	1-3
Business Law*							x	x	x	1-3
Business Management*								x	x	1-3
Business Technology						x	x	x	x	1
Entrepreneurship*								x	x	1-3
Word Processing						x	x	x	x	1
Business Communication*								x	x	1-3
Electronic Office*								x	x	1-3
Multi-Media Publishing*							x	x	x	1-3
International Business*								x	x	1-3
Medical Office*								x	x	1-3
Legal Office*								x	x	1-3

*Credit may be awarded for junior/senior level courses for both the related class (1 credit) and the work-site experiences. The credit for work-site experiences is based on the number of class hours spent at the work site for a maximum of two (2) credits per related class.

**Business Economics is an interdisciplinary course which meets the graduation requirement for Economics.

Overview of Business Education

The vision of Kentucky Business Education is to promote business professional development, enhance leadership, provide relevant curriculum, and to be vital to the education of all students. Kentucky Business Education will:

- operate as the center for industry standard desktop and communications technology in schools,
- provide a critical link in school to employment or postsecondary education,
- develop stronger relationships with the business community in terms of mutual advocacy, cooperative field experiences, employment placement, and support for FBLA experiences,
- represent a necessary component in the education of all students,
- require and promote critical thinking and problem solving,
- offer a flexible curriculum based on standards and that adapts to change, and
- have a broad network of business partnerships.

The Kentucky Chapter of International Association of Administrative Professionals (IAAP) and the Business and Marketing Education Team have developed the skill standards required to obtain an Administrative Support Services Certificate. Students may obtain this skill standards certificate by taking four specific business education courses and reaching proficiency on the skill standards assessment. These standards reflect what employers are looking for when they seek to hire employees and are essential for students to be able to do upon graduation.

The Kentucky Bankers Association and the Business and Marketing Education Team have developed the skill standards required to obtain a Financial Services Certificate. Students may obtain this skill standard certificate by taking four specific business education courses and reaching proficiency on the skill standard assessment.

Students are encouraged to participate in cooperative education and other work-based learning experiences. Cooperative Education consists of in-school instruction combined with on-the-job work experience. Specific guidelines are outlined in 705 KAR 4:041. Information on other types of work-based learning are described in detail in the document Work-Based Learning Guide 2000, which is available on the KDE web page at: <http://www.kde.state.ky.us/careerandtechnicaleducation/resourcesandpublications>.

Business Economics is an interdisciplinary course which meets the graduation requirement for Economics, the Social Studies requirement.

School-based enterprises (banks, publishing companies, etc.) operated by students under the direction of a Business Education Teacher are encouraged and strengthen the student's classroom educational experience.

Computer and Technology Applications and Word Processing are courses having statewide articulation agreements. These agreements provide students with an opportunity to proceed from secondary to post-secondary, technical, and higher education in these computer-related areas in a non-duplicative manner.

Future Business Leaders of America (FBLA) is the organization for Business Education students. The co-curricular activities of FBLA must be an integral part of approved business education programs with all students encouraged to become involved in these activities. These experiences enhance leadership development, promote citizenship, and facilitate the transition from school to careers.

BUSINESS CAREER MAJORS

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BUSINESS AND MARKETING CAREER CLUSTER

BUSINESS CAREER MAJORS (continued)

Medical Office Services	Information Processing Services (MOUS Certification)	**Financial Services	Office/Clerical Services
Business and Marketing Career Exploration (7th – 8th Grades) Exploratory Computers (7th Grade) Keyboarding Applications (8th Grade)			
Grades 9-12			
Recommended Courses	Recommended Courses	Recommended Courses	Recommended Courses
Computer & Technology Appl. Word Processing *Medical Office	Computer & Technology Appl. Advanced Computer Applications *Electronic Office	Computer & Technology Appl. Accounting I *Financial Services I *Financial Services II	In this career major any four (4) courses in the Business Education Curriculum may be taken to achieve this career major. There is no upper-level course.
Elective Courses	Elective Courses	Elective Courses	Elective Courses
Accounting I Advanced Computer Applications Business Communication Business Principles and Applications Keyboarding Applications ***Medical Terminology ***Other Courses	Business Communication Keyboarding Applications Word Processing Multi-Media Publishing ***Other Courses	Accounting II Advanced Finance and Credit Business Communication Business Law Entrepreneurship Keyboarding Applications ***Principles of Marketing ***Other Courses	
*Credit may be awarded for these junior/senior-level courses for <u>both</u> the related class (1 credit) and the work-site experiences. The credit for work-site experiences is based on the number of class hours spent at the work site for a maximum of two (2) credits per related class. **A skill standards certificate entitled Financial Services can be obtained by taking Accounting I, Computer & Technology Applications, Financial Services I, Financial Services II, or one elective course and passing the skill standards assessment, ***Other Courses can be taken that are directly related to career major.			
NOTE: To complete a career major, students must earn four career-related credits within the major <u>and</u> complete the current required credits for graduation. Three credits must come from recommended courses <u>and</u> include an upper-level course (courses indicated with one asterisk).			
NOTE: Business Economics is an interdisciplinary course which meets the graduation requirement for Economics.			

MODEL COURSE SEQUENCE

BUSINESS MARKETING CAREER CLUSTER			
ACADEMIC CORE			
9 TH	10 TH	11 TH	12 TH
English	English II	English III	English IV
Algebra I	Geometry	Math Elective ↔	Elective
Science	Science	Health & PE	Science
Social Studies	History & Appreciation of Visual and Performing Arts	Social Studies	Social Studies
TECHNICAL CORE			
Computer & Technology Applications	Advanced Computer Applications	Business Technology	Financial Services I
BUSINESS AND MARKETING CAREER CLUSTER			
ACADEMIC CORE			
9 TH	10 TH	11 TH	12 TH
English	English II	English III	English IV
Algebra I	Geometry	Math Elective ↔	Elective
Science	Science	Health & PE	Science
Social Studies	History & Appreciation of Visual and Performing Arts	Social Studies	Social Studies
TECHNICAL CORE			
Computer & Technology Applications	Business Technology	Financial Services I	Multi-Media Publishing

MODEL COURSE SEQUENCE

ADMINISTRATIVE SUPPORT CAREER MAJOR			
ACADEMIC CORE			
9 TH	10 TH	11 TH	12 TH
English	English II	English III	English IV
Algebra I	Geometry	Math Elective ↔	Elective
Science	Science	Health & PE	Science
Social Studies	History & Appreciation of Visual and Performing Arts	Social Studies	Social Studies
TECHNICAL CORE			
Computer & Technology Applications	Accounting I	Word Processing (Elective)	Electronic Office
ADMINISTRATIVE SUPPORT CAREER MAJOR			
ACADEMIC CORE			
9 TH	10 TH	11 TH	12 TH
English	English II	English III	English IV
Algebra I	Geometry	Math Elective ↔	Elective
Science	Science	Health & PE	Science
Social Studies	History & Appreciation of Visual and Performing Arts	Social Studies	Social Studies
TECHNICAL CORE			
Computer & Technology Applications	Advanced Computer Applications (Elective)	Accounting I	Electronic Office

Advanced Computer Applications

Course Description: This course is designed to provide students with an advanced-level experience with practical applications through hands-on instruction. Course content will include understanding of various hardware, software, operating systems, and care/operations. The software includes advanced applications using word processing, graphing, spreadsheets, database management, desktop publishing, and electronic communications. Leadership development will be provided through FBLA. Upon completion of this course, a student will be ready to take the core level tests for MOUS Certification. SUGGESTED PREREQUISITE: Computer & Technology Applications	
Academic Expectations	Content/Process
2.37, 5.3, 5.4	Students will - demonstrate at an advanced level creating, editing, saving, revising, and printing word processing documents, spreadsheets and related graphs, database files, and related reports. - show the integration of word processing, spreadsheet, and/or database files including graphs and graphics. - demonstrate at an advanced level creating, editing, saving, and printing desktop publishing documents, which include text and graphics using principles of layout and design. - illustrate at an advanced level electronic presentations using a variety of concepts available in presentation software. - design a personal and business web page. - research and analyze career opportunities in information processing and develop an employment portfolio (letter of application, resume, etc.). - develop Future Business Leaders of America projects using a variety of software applications. - analyze various hardware and software used by business and industry; examine operating systems. - apply math and communication skills within the technical content. - demonstrate employability and social skills relative to the career cluster. - utilize activities of FBLA as an integral component of course content and leadership development.
1.16, 2.37, 5.3	
1.16, 2.9, 5.2	
1.15, 1.16, 2.22	
1.16, 5.2, 5.4	
2.36, 6.2, 6.3	
1.16, 2.37, 5.4	
1.2, 1.3, 5.4	
1.9, 1.10, 1.12	
2.36, 2.37	Connections - Secretary's Commission on Achieving Necessary Skills (SCANS) - National Standards: Administrative Support Occupations/Skill Standards, V-TECS - MOUS Certification
1.12, 4.0, 6.2	

Computer & Technology Applications

Course Description: Students will use a computer and application software including word processing, presentation, database, spreadsheets, internet, and email to prepare elementary documents and reports. The impact of computers on society and ethical issues are presented.

Prerequisites: Basic keyboarding skills or Keyboarding Applications

Recommended: 1 Credit

Academic Expectations	Content/Process
	Students will
1.11, 1.16	use a word processing program to create, save, print, modify, spell-check, and grammar-check a simple document
1.16, 2.37	use a word processing program to enhance the appearance of a simple document by using centered, right justification, boldface, underlined, and italicized text.
1.16, 2.37	use a word processing program to change the default margins and line spacing.
1.11, 1.13, 1.16	use a word processing program to create a document with headers, footer, and footnotes.
1.16, 2.8, 2.7	use a presentation program with text body, graphics, and animation.
1.16, 1.5-1.9, 2.7, 2.8	use an electronic spreadsheet to create, save, print, modify, and obtain graphs from a simple spreadsheet.
1.16, 1.5-1.9, 2.7, 2.8	use an electronic spreadsheet to perform basic mathematical operations including, but not limited to, addition, subtraction, multiplication, and division.
1.16, 2.37	use an electronic spreadsheet to calculate averages and percents.
1.16, 2.37	use an electronic spreadsheet program to enhance the appearance of a spreadsheet by changing fonts, foreground, and background colors; and centering text across columns.
1.10, 1.16, 2.37	use a database management program to create, maintain, and print reports from a simple relational database.
1.16, 2.37, 6.2	use a database management program to customize the user interface by creating and maintaining forms and reports.
1.16, 6.3	use a database management program to query tables using basic query operations such as "and", "or", "not", etc.
1.16, 6.2, 6.3	print in landscape and portrait orientations.
1.16, 6.2, 6.3	use the component of the operating system that helps the user manipulate files and folders to copy, move, rename, and delete files; and to create, copy, move, rename, and delete folders.
1.11, 1.16, 6.2	use a World Wide Web browser to navigate hypertext documents and to download files.
1.16, 2.14, 2.16, 3.5, 3.6	use Internet search engines and understand their advantages and disadvantages.
2.14, 5.4, 5.1	use an electronic mail program to send and receive electronic mail.
1.16, 5.4	discriminate between ethical and unethical uses of computers and information.
1.16, 5.4	demonstrate a basic understanding of issues regarding software copyright, software licensing, and software copying.
1.16, 2.18, 2.37	demonstrate an awareness of computer viruses and basic understanding of ways to protect a computer from viruses.
1.16, 6.3	demonstrate a basic understanding of the impact of computers on society.
	use and understand basic computer terminology.
Connections FBLA, DECA, SkillsUSA-VICA, TSA, STLP	

- Secretary's Commission on Achieving Necessary Skills (SCANS)
- National Standards: Administrative Support Occupations/Skill Standards, V-TECS
- Kentucky Occupational Skill Standards

Exploratory Computers

Course Description: This course is for 7th grade students and is a 6-, 9-, or 12-week course that provides the student with hands-on illustration of the following:

- ◆ Keyboarding—apply appropriate fingering techniques and posture
 - ◆ Word Processing—create, edit, print, save, and retrieve documents
 - ◆ Database—enter data, search and sort, and create simple reports
 - ◆ Spreadsheets—enter data, calculate, and print reports
 - ◆ Career Exploration—explore career opportunities
 - ◆ *Graphics—create, print, save, and retrieve data
 - ◆ *Telecommunications—introduction to information transfer, electronic mail, and database
- *If software is available**

Academic Expectations	Content/Process
1.16, 2.34, 2.35 1.16, 2.7, 2.10 2.36, 2.37, 2.38 1.1, 1.10, 6.1 1.16, 2.37 2.37 2.37, 3.0	Students will • demonstrate proper keyboarding techniques. • apply formatting to block style letters, reports, charts/tables, and spreadsheets. • explore job and career opportunities in computer-related areas and recognize the importance of communication skills. • apply standard rules of spelling, punctuation, grammar, and capitalization. • identify and explain telecommunications. • identify characteristics of positive work habits and a good work ethic. • demonstrate organization and care of workstation.
Connections • Age-appropriate software packages. • <i>Kentucky Cyber Keys: A P-8 Guide to Keyboarding</i> • Secretary's Commission on Achieving Necessary Skills (SCANS)	

Keyboarding Applications

Course Description: This course is designed for students who have little or no keyboarding experience. Keyboarding Applications will develop the touch system of keying with added emphasis on the development of proper keyboarding techniques, speed, and accuracy. Six to nine weeks will be spent developing the touch system. The student will apply techniques for proofreading, editing, word division, capitalization, and punctuation for production of mailable copies of letters, simple business forms, tabulated information, and manuscripts. A computerized workstation with appropriate software is required for each student. *Telecommunications concepts may be addressed through simulation or application. After completion of Keyboarding Applications, a student may take either Word Processing or Computer and Technology Applications. Leadership development will be provided through FBLA.

Schools may determine through an appropriate test instrument whether students will enroll in Keyboarding Applications, Computer and Technology Applications, or Word Processing.

Academic Expectations	Content/Process
1.16, 2.34 1.1, 1.10, 6.1 2.37, 2.7, 5.3 1.16, 5.5 1.11, 2.36, 6.1 1.16, 2.36, 2.37 1.16, 2.36, 2.38 2.37, 3.0, 5.4 2.37, 3.0, 4.0 1.9, 1.10, 1.12 2.36, 2.37	Students will • demonstrate keyboard techniques. • apply language rules, proofreader's marks, and reference materials. • apply basic formatting procedures and manipulate data in letters, reports, simple tables, spreadsheets, graphics, graphs and charts, and databases. • create or simulate electronic communication and telecommunications of the following: voice, data, image, text, and video. • compose documents. • research and analyze career opportunities in computer-related careers. • complete a career portfolio which includes letter of application, employment application, letter of reference, resume, interviewing techniques, follow-up letter, and letter of resignation. • develop good work habits and a work ethic that impacts success at school and in the workplace. • utilize activities of FBLA as an integral component of course content and leadership development. • apply communication skills within the technical content. • demonstrate employability and social skills relative to the career cluster.
Connections • Kentucky Occupational Skill Standards • Secretary's Commission on Achieving Necessary Skills (SCANS) • National Standards: Administrative Support Occupations/Skill Standards, V-TECS	

Multimedia Publishing

Course Description: This hands-on course applies publishing and presentation concepts through the development of sophisticated business documents and projects. These documents include, but are not limited to, brochures, manuscripts, reports, programs, catalogs, newsletters, flyers, business forms, graphs, web pages, on-screen presentations, and video productions. Equipment such as scanners, digital cameras, video cameras, and color laser printers, may be utilized in creating the documents. Formatting, editing, page layout, and design concepts are taught. Distribution ready publication standards are applied to all projects. Students will develop communication skills, problem-solving techniques, cooperative learning, and interpersonal skills.

PREREQUISITE: Computer and Technology Applications.

RECOMMENDED: 1 Credit

Academic Expectations	Content/Process
1.1, 1.2, 1.16 2.9, 2.10 2.36, 2.37, 6.3 1.13, 5.4 5.2, 5.4 1.13, 2.9 1.15, 2.22 1.16, 2.9, 5.2 1.16, 5.5 1.13, 2.10 1.13, 2.9, 2.10 2.36 1.12, 4.0, 6.2 1.9, 1.10, 1.12	Students will • apply language rules and proofreader's marks; use reference materials, style, grammar, and spell check. • define and apply terminology associated with desktop publishing, layout, and design. • research and analyze career opportunities in multimedia publishing and graphic arts. • use industry-standard hardware and software components of a multimedia publishing system such as digital cameras, scanners, & video cameras • apply basic HTML to create a simple web page • compose and design effective business publications and documents. • develop multimedia presentations (slide show, video, audio, etc.). • design page layout with appropriate proportions, balance, and typography. • demonstrate the ability to use the Internet • use business graphics and paint, draw, and image-editing programs. • design Career & Technical Education Student Organizations documents using effective multimedia publishing skills. • demonstrate employability and social skills relative to the career cluster. • utilize activities of a Career & Technical Education Student Organization as an integral component of course content and leadership development. • apply math, science, and communication skills relative to the career major. • design a web page using a software package
Connections • FBLA, DECA, SkillsUSA-VICA, TSA, STLP • Secretary's Commission on Achieving Necessary Skills (SCANS) • National Standards: Administrative Support Occupations/Skill Standards, V-TECS	

Touch Keyboarding for 4-6th Grade

Course Description: This is a six-to-nine week course where students will develop skills in operating a keyboard by touch with emphasis on entering the alphabet, numbers, and symbols with proper technique.

Academic Expectations	Content/Process
1.16, 2.34, 2.35 1.16, 2.7, 2.10	Students will • demonstrate proper keyboarding techniques.

1.1, 1.10, 6.1 2.37	• apply formatting to simple documents (letters, reports, and articles). • apply standard rules of spelling, punctuation, grammar, and capitalization. • organize and maintain workstation.
Connections • Age-appropriate software packages • Kentucky Cyber Keys: A P-8 Guide to Keyboarding • Secretary's Commission on Achieving Necessary Skills (SCANS)	

Word Processing

Course Description: This course is designed for students who have already developed proficiency in Exploratory Computers (or its equivalent). The student will spend two to three weeks reviewing the touch system of keying with emphasis on proper technique and developing speed and accuracy. The student will apply techniques for composing, proofreading, editing, word division, capitalization, and punctuation for production of mailable copies of letters, business forms, tables, and reports. In-depth instruction for the generation of desktop publishing documents, spreadsheets, graphics, graphs, charts, and databases through application is a vital part of this course. The student will also research career opportunities in computer-related careers. A computerized workstation with appropriate software is required for each student. Leadership development will be provided through FBLA. <i>*Telecommunications concepts may be addressed through simulation or application where Telecommunications software is available.*</i> Schools may determine through an appropriate test instrument whether students will enroll in Keyboarding Applications, Computer Applications, or Word Processing. SUGGESTED PREREQUISITE: Exploratory Computers or Keyboarding Applications.	
Academic Expectations	Content/Process
1.16, 2.34 1., 1.10, 6.1 1.16, 2.37, 5.4 1.2, 1.4, 6.3 1.16, 5.5 1.11, 1.16, 6.1 2.36, 6.2, 6.3 2.36, 2.38, 6.3 2.37, 3.0, 5.4 2.37, 3.0, 4.0 2.36, 2.37 1.9, 1.10, 1.12	Students will • demonstrate correct technique in operating the keyboard; use skill building drills to increase accuracy and speed. • apply language rules, proofreader's marks, and reference materials. • apply basic and advanced formatting procedures and manipulate data in the following: letters, reports, tables, spreadsheets, graphics, graphs and charts, and databases. • identify steps in the word processing cycle; and define and use terminology associated with office automation concepts. • create or simulate electronic and telecommunications in the following: voice, data, image, text, and video; and create desktop publishing documents. • compose documents using basic formatting guidelines. • research and analyze career opportunities in computer-related careers. • complete a career portfolio which includes a letter of application, an employment application, a letter of reference, a resume, interviewing techniques, a follow-up letter, and a letter of resignation. • develop good work habits and a work ethic that impacts success at school and in the workplace. • utilize activities of FBLA as an integral component of course content and leadership development. • demonstrate employability and social skills relative to the career cluster. • apply math and communication skills within the technical content.
Connections • Secretary's Commission on Achieving Necessary Skills (SCANS) • National Standards: Administrative Support Occupations/Skill Standards, V-TECS	

STANDARDS AND BENCHMARKS

Standards and benchmarks provide a framework for local curriculum development. A school district's physical facilities, available equipment, resources, and community and business support are only a few of the factors that make the system unique and determine the curriculum offered.

In using this framework to develop curriculum, a *standard* is the major outcome of a course and *benchmarks* are the goals for obtaining that outcome. Local systems will select the career majors to be offered, the courses offered in these majors, and create the objectives and activities that teachers will use to direct their instruction to reach the benchmarks for the selected courses.

This procedure will allow local systems to structure curriculum to meet the needs of their students, schools, and communities while remaining consistent with the overall framework for the entire state.

Local systems will use the career majors as a guide to select the courses that will be offered for each major. Not all career majors or all courses listed with the major in this framework must be offered locally. Employment opportunities and postsecondary education availability in the local area should be considered as curriculum is developed.

To be identified as a vocational completer, a student must successfully complete four courses in the career major--two of which must be competency courses. The other two courses must be selected from the competency courses and/or related elective courses identified in the career major.

Business Education programs shall provide opportunities for business education students to receive instruction in one or more career majors. A career major consists of at least four of the courses recommended for the major. Two of the courses must be at the competency level. High schools with two or less full-time teachers may offer required courses on an alternating basis in order to meet the requirements for program approval. An approved vocational program at the junior high level (grades 7-8) shall include a minimum of three classes in Business Education or Exploratory Business.

The first semester of Keyboarding is considered a foundation skill for *each* career major. Touch typing skill, keyboard layout, and business formats should be taught at the junior high (grades 6-8) level *if possible*, to allow time for concentration on competency courses in a career major. If students have not completed Keyboarding and Keyboarding Applications upon entering high school, these should be the *first* business courses taken.

The Business Education content standards and the five career majors are described in detail beginning on page 16. Each of the five career majors are defined by required competency courses and related elective courses, a focus statement that describes its importance and uniqueness, and examples of employment options available to the student upon the successful completion of the career major. (Page ii in the Appendix provides a matrix for easy reference to the career majors and recommended courses.)

Louisiana – Source: Louisiana K-12 Educational Technology Standards - 2003
<http://www.doe.state.la.us/doe/LCET/curric/k12stand.asp>

Louisiana K-12 Educational Technology Standards

Mission Statement

This document provides a framework for the integration of technology across the curriculum.

Philosophy

The Louisiana K-12 State Educational Technology Standards are based on the National Educational Technology Standards and the Louisiana State Content Standards. These technology standards support the beliefs set forth by the state educational technology goal: "All educators and learners will have access to technologies that are effective in improving student achievement."

The Louisiana K-12 State Educational Technology Standards parallel the foundation skills and core understandings embodied in the Louisiana Content Standards. Additionally, the standards are designed to reflect the conviction that technology is best understood and taught in a realistic and integrated setting in a variety of curriculum areas. The alignment of the technology standards with the foundation skills provides for such integration across all content areas. Consequently, these standards and the associated performance indicators are to be integrated in all aspects of the curriculum and not taught in isolation, utilizing fully the resources of the classroom, the school, and the community. The technology standards promote the development of technology/information literate students, including those with disabilities, to be self-directed learners, who individually and collaboratively use technology/information responsibly to create quality products and to be productive citizens. The focus is on learning with information and technology rather than learning about technology. Integration of these standards will be varied and dynamic, reflecting the diversity of instructional and student needs in our schools and districts.

Definition

Technology consists of any electronic tool used for solving problems, communicating clearly, processing information, increasing productivity, accomplishing a task, making informed decisions, and enhancing the quality of life.

K-12 Technology Standards

1. Technology Communication Tools (Communication Foundation Skill)

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

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

2. Technology Problem-Solving and Decision-Making Tools (Problem Solving Foundation Skill)

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

Students employ technology for real world problem solving.

Students evaluate the technology selected, the process, and the final results through the use of informed decision-making skills.

3. Technology Productivity Tools (Resource Access and Utilization Foundation Skill)

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

Students use productivity tools to work collaboratively in developing technology-rich, authentic, student-centered products.

4. Technology Research Tools (Linking and Generating Knowledge Foundation Skill)

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

Students use technology tools to process data and report results.

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

5. Social, Ethical, and Human Issues (Citizenship Foundation Skill)

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

Students practice responsible use of technology systems, information, and software.

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

6. Basic Operations and Concepts

Students demonstrate a sound understanding of the nature and operation of technology systems.

Students are proficient in the use of technology

Performance Indicators for Grades K-4

The following performance indicators should be used as guidelines in integrating technology into the content standards.

1. Identify, explain, and effectively use input, output and storage devices of computers and other technologies (e.g., keyboard, mouse, scanner, adaptive devices, monitor, printer floppy disk, hard drive). (5,6)
2. Use accurate and developmentally appropriate terminology (e.g., cursor, software, hardware, pull down menu, window, disk drive, hard drive, CD-ROM, laser disc) when referring to technology. (6)
3. Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide. (5,6)
4. Discuss basic issues related to responsible use of technology and information; and describe personal consequences of inappropriate use. (5)
5. Use a variety of developmentally appropriate resources and productivity tools (e.g., logical thinking programs, writing and graphic tools, digital cameras, graphing software) for communication, presentation, and illustration of thoughts, ideas, and stories (e.g., signs, posters, banners, charts, journals, newsletters, and multimedia presentation.) (1,3,4)
6. Use technology tools (e.g., publishing, multimedia tools, and word processing software) for individual and for simple collaborative writing, communication, and publishing activities for a variety of audiences. (1,3)
7. Gather information and communicate with others using telecommunications (e.g., email, video conference, internet) with support from teachers, family members, or peers. (1,4,5,6)
8. Utilize search strategies employing keywords, phrases, and Boolean operators (and, or, not) to access and retrieve information. (4)
9. Evaluate electronic information for accuracy, relevance, appropriateness, comprehensiveness, and bias. (2,4,5)
10. Use technology resources to assist in problem-solving, self-directed learning, and extended learning activities. (2,4)

Performance Indicators for Grades 5-8

The following performance indicators should be used as guidelines in integrating technology into the content standards.

1. Identify and define computer and networking terms (e.g., modem, file server, client station, LAN, Internet/Intranet, data storage device). (6)
2. Understand and apply common troubleshooting techniques. (6)
3. Demonstrate the operations of a computer (e.g., touch-keyboarding skills, save, organize and back-up files) and other peripheral devices (scanner, digital and video cameras, VCR, laser disc player) at an intermediate level. (6)

- 4.Compose and edit a multi-page document with appropriate formatting using word-processing skills. (e.g., menu, tool bars, dialog boxes, spell check, thesaurus, page layout, headers and footers, word count, margins, tabs, spacing, columns, page orientation) (1, 3, 6)
- 5.Use information, media, and technology in a responsible manner which includes following the school's acceptable use policy, adhering to copyright laws, respecting the rights of others, and employing proper etiquette in all forms of communication.(4, 5)
- 6.Recognize the importance of information technology and its effect on the workplace and society. (5)
- 7.Use multimedia tools and desktop publishing to develop and present computer-generated projects for directed and independent learning activities. (1,3)
- 8.Use technology tools (e.g., multimedia authoring, writing tools, digital cameras, drawing tools, web tools) to gather information for problem solving, communication, collaborative writing and publishing to create products for various audiences. (1,3,4)
- 9.Demonstrate intermediate e-mail skills (e.g., sending attachments, organizing an address book, forwarding messages). (1,4)
- 10.Understand Internet concepts (e.g., website, hypertext link,bookmarks, URL addresses) and apply intermediate on-linereaching techniques (e.g., employ keyword, phrases, and Boolean Operators). (1,4)
- 11.Use telecommunications and online resources efficiently and effectively to collaborate with peers, experts, and others to investigate curriculum-related problems, issues, and information and to develop solutions or products for various audiences. (1,2,3,4)
- 12.Communicate information using spreadsheets and databases to visually represent data and integrate into other documents(e.g., entering data, formatting using formulas, analyzing data, and sorting). (1,2,3,4)
- 13.Determine when technology is useful and select the appropriatetool(s) and technology resources to address a variety of tasks and problems. (2)
- 14.Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information. (2,4,5)

Performance Indicators for Grades 9-12

The following performance indicators should be used as guidelines in integrating technology into the content standards.

- 1.Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use. (6)
- 2.Make informed choices among technology systems, resources, and services. (5,6)

3. Demonstrate knowledge and skills of Internet use and other resources consistent with acceptable use policies including the legal consequences of plagiarism and the need for authenticity in student work through an understanding of copyright issues. (5)
4. Demonstrate and advocate legal and ethical behaviors among peers, family, and community regarding the use of technology and information. (5)
5. Explain and use advanced terminology, tools, and concepts associated with software applications, telecommunications, and emerging technologies. (1,3)
6. Use technology tools and resources for managing and communicating personal/professional information (e.g., finances, schedules, addresses, purchases, correspondence). (1,3)
7. Refine knowledge and enhance skills in keyboarding, word processing, desktop publishing, spreadsheets, databases, multimedia, and telecommunications in preparing and presenting classroom projects. (3,6)
8. Collaborate (e.g., desktop conferencing, e-mail, on-line discussions) with peers, experts, and others to compile, synthesize, produce and disseminate information, models, and other creative works. (1,2,3,5)
9. Evaluate technology-based options for lifelong learning. (4)
10. Use appropriate technology to locate, retrieve, organize, analyze, evaluate, and communicate information for problem solving and decision making. (1,2,4)
11. Evaluate the usage of technology and the processes involved during and upon completion of individual and group projects. (2,5)

Business and Technology, 2000
Keyboarding 21

KEYBOARDING

COURSE DESCRIPTION

Keyboarding provides the student an opportunity to master the touch-method keystroking skill for entering alphabetic, numeric, and symbolic information on a keyboard and a ten-key pad. Emphasis is placed on developing proper speed and accuracy techniques. Students format documents such as letters, memorandums, reports, and tables for personal, educational, and business uses.

This course is designed to be a one semester, ½ credit course.

Suggested Competencies and Objectives:

1. Develop touch keyboarding techniques.

a. Demonstrate proper techniques in alphabetic and numeric touch keyboarding.

Suggested Teaching Strategies:

- *Teacher will have students observe and critique peers in groups of two or more.*

Suggested Assessment Methods:

- *Observe students.*

2. Develop basic formatting concepts.

a. Set margins and tabs.

Suggested Teaching Strategies:

- *Divide the class into pairs of students. In each pair, one student will read instructions for setting the margin while the partner performs the operations.*

Suggested Assessment Methods:

- *Peer assessment.*

b. Center horizontally and vertically.

3. Develop speed, accuracy, language, and proofreading skills.

a. Periodically key and proofread timed writings.

Suggested Teaching Strategies:

- *Students play "typing football." The class is divided into 2 teams. Teams take timed writings for either accuracy or speed (the teacher decides) with the winning team advancing the ball 10 yards toward their goal. Winning writings are verified by opposing team members. The winning team is rewarded.*

Suggested Assessment Methods:

- *Teacher observation.*

b. Make corrections in grammar by applying language skills rules.

4. Produce letters according to accepted business formats.

a. Key letters in block format.

b. Key envelopes.

5. Format and produce simple tables.

a. Calculate margins and tab stops for simple tables.

b. Key and print simple tables.

Suggested Teaching Strategies:

- *The teacher will assign problems dealing with simple tables. In groups, students will calculate the left margin, top margin, and tab stops for each column.*

Suggested Assessment Methods:

- *Students evaluate each other's work.*

6. Format and produce simple reports.

a. Key in simple reports.

Suggested Teaching Strategies:

- *Following instructions, students key assigned reports from other classes, such as English, science, history, etc.*

Suggested Assessment Methods:

- *Assess report with a rubric.*
- b. Format and print simple reports.

North Carolina – Source: <http://www.elon.edu/taylorb/compskills/K-12/kbwpdtp.html>

NC Computer/Technology Skills Objectives for Grades K-8
Keyboard/Word Processing/Desktop Publishing Topic

[Philosophy](#) | [Overview and Goals](#) | [Focus Areas](#) | [Objectives by Grade level](#) | [Objectives by Topic](#)
[K-12 Technology Competencies Home](#)

KEYBOARD UTILIZATION/WORD PROCESSING/DESKTOP PUBLISHING				
K	1	2	3	4
1.5 Identify word processing software as a tool for writing.	2.2 Locate and use letters, numbers, and special keys on a keyboard.	2.3 Demonstrate correct finger placement for home row keys.	1.3 Recognize the benefits of word processing.	2.2 Practice proper keyboarding techniques for upper and lower case letters.
2.1 Locate and use letters, numbers, and special keys on a keyboard.	2.3 Identify basic word processing terms.	2.4 Use word processing to enter, save, print, and retrieve text.	2.3 Demonstrate proper keyboarding techniques for upper and lower case letters.	2.3 Recognize word processing terms and functions.
2.2 Place the cursor at a specified location.	2.4 Key words and/or sentences using word processing.		2.4 Retrieve and edit a word processed document.	2.4 Edit a word processing file to make indicated corrections.
			3.1 Create, save, and print a word processed document.	3.1 Create, format, save, and print a word processed document.

KEYBOARD UTILIZATION/WORD PROCESSING/DESKTOP PUBLISHING			
5	6	7	8
2.3 Use keyboarding skills to improve speed and accuracy.	2.1 Use keyboarding skills to increase productivity and accuracy.	3.2 Use word processing/desktop publishing for assignments/projects.	3.2 Use word processing/desktop publishing for assignments/projects.
2.4 Use a word processing application to create and format a document.	3.2 Use word processing/desktop publishing applications to create documents related to content areas.	3.3 Research, create, publish, and present projects related to content areas using a variety of technological tools.	3.3 Research, create, publish, and present projects related to content areas using a variety of technological tools.

This page created and maintained by [Barbara Z. Taylor](#) , Associate Professor of [Computing Sciences](#) and Coordinator of Educational Technology for [Teacher Education](#) at [Elon University](#). Email: taylorb@elon.edu
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NC - Source: <http://www.elon.edu/taylorb/compskills/K-12/overview.html#goals>
 Computer/Technology Skills Curriculum **Grades 9-12**

Grade Level: 9-12	
STRANDS: SI = Societal Issues; KU/WP/DTP = Keyboard Utilization/Word Processing/Desktop Publishing; DB = Database; SS = Spreadsheet; T = Telecommunications; M/P = Multimedia/Presentation	
Competency Goal 1	The learner will understand important issues of a technology-based society and will exhibit ethical behavior in the use of computer and other technologies. 1.1 Practice ethical behavior in using computer-based technology for class assignments and projects. 1.2 Identify issues surrounding complex technology environments.
Competency Goal 2	The learner will demonstrate knowledge and skills in the use of computer and other technologies. 2.1 Practice and refine knowledge and skills in keyboarding/word processing/desktop publishing, spreadsheets, databases, multimedia, and telecommunications in preparing classroom assignments and projects. 2.2 Select and use appropriate technology tools to efficiently collect, analyze, and display data.
Competency Goal 3	The learner will use a variety of technologies to access, analyze, interpret, synthesize, apply, and communicate information.
Arts Education (Dance, Music, Theatre Arts, Visual Arts)	3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data. 3.2 Select and use appropriate technologies as a means of artistic expression. 3.3 Use electronic resources for research. 3.4 Use technological tools for class assignments, projects, and presentations. 3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
English	3.1 Use word processing and/or desktop publishing for a variety of writing assignments/projects. 3.2 Use electronic resources for research.

	3.3 Select and use technological tools for class assignments, projects, and presentations. 3.4 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
Foreign Languages	3.1 Select and use appropriate technologies to communicate in other languages with other cultures. 3.2 Select and use technological tools for class assignments, projects, and presentations. 3.3 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
Health/Physical Education	3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data. 3.2 Use technology for experiments and/or research. 3.3 Use electronic resources for research. 3.4 Select and use technological tools for class assignments, projects, and presentations. 3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
Mathematics	3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data. 3.2 Use spreadsheets to solve problems and display data. 3.3 Use a calculator, scientific calculator, or graphing calculator for problem-solving. 3.4 Select and use technological tools for class assignments, projects, and presentations. 3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
Science	3.1 Use scientific instruments to perform experiments. 3.2 Use appropriate technology tools to efficiently collect, analyze, and display data. 3.3 Use electronic resources for research. 3.4 Use spreadsheets and/or databases to collect, record, analyze, and present data. 3.5 Select and use technology tools for class

	presentations. 3.6 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
Social Studies	3.1 Select and use appropriate technology tools to efficiently collect, analyze, and display data. 3.2 Use databases to collect, record, analyze, and display data. 3.3 Use electronic resources for research. 3.4 Select and use technological tools for class assignments, projects, and presentations. 3.5 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.
Workforce Development (Agricultural Education, Business and Marketing, Industrial Technology and Human Services, Biotechnology, Health Care, and Career Development)	3.1 Select and use appropriate technologies to prepare for the workplace. 3.2 Use electronic resources for research. 3.3 Select and use technological tools for class assignments, projects, and presentations. 3.4 Adhere to Fair Use and Multimedia Copyright Guidelines, citing sources of copyrighted materials in papers, projects, and multimedia presentations.

South Carolina - Source: Keyboarding: 2003

<http://www.myschools.com/offices/cate/competencies/KeybdCompetencies.doc>

KEYBOARDING

ACTIVITY COURSE CODE: 5100 HIGH SCHOOL

Middle School Course for High School Credit: 2852

COURSE DESCRIPTION: This course is designed to provide an opportunity for students to master the skill of entering alphabetic, numeric, and symbolic information on a keyboard and a ten-key pad using the touch method of keystroking. Emphasis is placed on development of accuracy and speed, proper techniques, and correct fingering. The student will develop skill in formatting letters, memoranda, reports, tables, and other business documents.

OBJECTIVE: Given the necessary hardware, software, supplies, and facilities, the student will be able to successfully complete all of the following competencies in a course that grants one-half unit of credit.

COMPUTERS REQUIRED: One computer per student

CREDIT: ½ unit

PROFICIENCY TEST: The Office of Career and Technology Education has developed a keyboarding proficiency test that is available for use in school districts upon request of and supervision of the business, marketing, and computer technology department chair to determine readiness for taking higher level computer courses such as Business Computer Applications and Computer Technology. A student who feels he or she does not need to take the full Keyboarding course may elect to take this test if the district decides to make this option available. If the student meets the requirements on the test, he or she may choose not to take the Keyboarding course. However, no Carnegie half-credit is given for passing the proficiency test. Passing this test would meet the state requirement for keyboarding proficiency and the prerequisite skill requirement for upper-level computer courses in business, marketing, and computer technology education. Score sheets for the test, supervised and graded under the direction of the business, marketing, and computer technology department chair, should be given to the chairman of the business, marketing, and computer technology department at the high school for use in determining whether the student should be allowed into the next level computer course.

A. SAFETY

The student will be able to:

1. Identify good work attitudes that affect safety on the job.
2. Identify major causes of office-related accidents.
3. Demonstrate knowledge of an emergency plan.
4. Describe the threat of viruses to a computer network, methods of avoiding attacks, and options in dealing with a virus attack.
5. Identify potential abuse and unethical uses of computers and networks.

B. KEYBOARDING MASTERY

The student will be able to:

1. Use correct fingering and proper techniques to key alphanumeric information.
2. Use correct fingering and proper techniques to key numeric information on a ten-key pad.
3. Use touch techniques to key information.
4. Demonstrate speed at a **minimum** rate of 25 wpm with a **maximum** of three errors on a three-minute writing.
5. Use equipment and/or software capabilities to correct errors.
6. Use correct procedures for storing and retrieving information.
7. Demonstrate proper use of hardware and software.

C. LANGUAGE SKILLS

The student will be able to:

1. Follow oral and written instructions.
2. Identify and use basic keyboarding and computer terminology.
3. Apply rules for punctuation, grammar, spelling, number expression, word division, and capitalization.
4. Compose paragraphs at the keyboard.
5. Edit copy using proofreader's marks.

D. DOCUMENT FORMATTING

The student will be able to:

1. Format, key, and edit simple problems vertically and horizontally.
2. Use special features, such as bold, underline, italics, bullets, and numbering to enhance a document.
3. Identify the basic parts of business documents.
4. Format, key, and edit personal business letters.
5. Format, key, and edit business letters.
6. Format, key, and edit envelopes.
7. Format, key, and edit memoranda.
8. Format, key, and edit reports.
9. Format, key, and edit tables.
10. ★Format, key, and edit fax cover sheets.

11. ★Format, key, and edit outlines.
12. ★Format, key, and edit resumes.
13. ★Format, key, and edit agendas.

★Enrichment competencies for students participating in FBLA Word Processing I competitive event

Revised May 2002

National Business Education Curriculum Standard(s): Communication and Information Systems

Competency Revision Teacher Committee: Kathy Ernst, Batesburg-Leesville Middle School; Gwen Floyd, Lakewood High School; Ronda Mahaffey, Lancaster County vocational School; and Linda Skinner, North Augusta High School.

Competency Revision and Review Business Advisory Committee: Elizabeth Bastedo and Margie Brunson, Central Carolina Technical College, Sumter; Kathy Greene, Executive Secretary, Spartanburg; Leighton McLendon, North Augusta; Melody Penegar; Sylvia Rikard, Quality Control at Milliken Plant, Saluda; and Christie Stoddard and Marion Nurse, Midlands Technical College, West Columbia

TEXTBOOKS

1996 State-Adopted Textbooks for Keyboarding 7-12 (new adoption for 2003-2004)

EMC/Paradigm Publishing

EMC Keyboarding and Applications, 1993

Microcomputer Keyboarding and Applications, 1994

Glencoe, McGraw-Hill

Microcomputer Keyboarding and Document Processing, 1996

Skillbuilding: Building Speed and Accuracy on the Keyboard, 1996

Skillbuilding: Building Speed and Accuracy on the Keyboard Versatile Instructional System for Windows, 1996

South-Western Publishing

Keyboarding and Computer Applications, 1995

Keyboarding Software Complete Package DOS, 1993

Micro Pace Plus Macintosh Package, 1994

Micro Pace Plus Timed Writing Software Program, 1994

Century 21 Keyboarding and Information Processing, 6th Edition, 1997

Century 21 Keyboarding and Information Processing Complete Course, 6th Ed., 1997

Microtype Pro, Macintosh, Site License, 1997

Microtype Pro, Windows, Site License, 1997

West Publishing Company

Keyboarding Reinforcement Software (Macintosh and DOS), 1994

Keyboarding for Personal and Business Use, 1994

RESOURCES

FBLA PowerPoint Presentation, 2002

FBLA Medi@Show Presentation, 2002

(<http://www.dimensional.com/Mediashow.htm>)

DECA PowerPoint Presentation, 2002

DECA Medi@show Presentation, 2002

(<http://www.dimensional.com/Mediashow.htm>)

Safety PowerPoint Presentation (Safety.ppt), 2000 (for the computer classroom)

Safety PowerPoint Presentation (Safety2.ppt), 2000 (for the regular and computer classrooms)

Leadership and Personal Development Competencies

RELATED STUDENT ORGANIZATION COMPETITIVE EVENTS***FBLA***

This course will help prepare students for the ***Word Processing I*** FBLA Competitive Event. Read the national guidelines in their entirety at

<http://www.fbla-pbl.org/> because the course may not include everything the students will need to know for the competition.

South Carolina: Keyboarding (May 2002)

Tennessee

Source: Keyboarding 2003 <http://www.k-12.state.tn.us/pdf/vekeybd.pdf>

KEYBOARDING

The student will develop basic skills in operating a computerized keyboard by using the touch system to produce mailable business documents. Mailability standards relate to keying, formatting, grammar, punctuation, capitalization, spelling, content, typography and layout and design. Using special features of the software, such as the table function, the student will be able to format academic and business reports.

Prerequisites: None

Recommended Prerequisite: Touch

Keyboarding Grades: 9, 10, 11, 12

Recommended Credit: ½ Credit

Keyboarding

Standard: 1.0

The student will operate and maintain the workstation.

Standard 2.0

The student will operate the keyboard using the touch system.

Standard 3.0

The student will apply language arts skills to prepare business documents.

Standard 4.0

The student will demonstrate speed and accuracy using the touch system of keying.

Standard 5.0

The student will format text.

Standard 6.0

The student will key business documents.

Standard 7.0

The student will demonstrate organizational and professional leadership skills.

Keyboarding

Course Description

The student will develop basic skills in operating a computerized keyboard by using the touch system to produce mailable business documents. Mailability standards relate to keying, formatting, grammar, punctuation, capitalization, spelling, content, typography and layout and design. Using special features of the software, such as the table function, the student will be able to format academic and business reports. *(This course requires a computerized workstation for each student with keyboarding/word processing software.)*

Standard: 1.0

The student will operate and maintain the workstation.

Learning Expectations The student will:

- 1.1 Interpret computer and keyboarding terminology.
- 1.2 Manage the computer system and related software.
- 1.3 Interpret the copyright and the ethical issues involved in using a computerized workstation.
- 1.4 Analyze copyright laws.

Performance Standards: Evidence Standard is Met

The student:

-  Applies computer and keyboarding terminology.
-  Demonstrates the handling of the computerized workstation.
-  Debates the ethical and the legal issues involved in using a computerized workstation.

Sample Performance Task

-  Design and maintain a check sheet on proper care of the workstation.
-  Review and analyze a case study on the ramifications of copying another person's work as your own and of copying borrowed software on your own personal computer. Report the implications or impacts that this has in applying the copyright laws.

Keyboarding

Integration/Linkages

Language Arts, *SCANS (The Secretary's Commission on Achieving Necessary Skills)*, National Standards for Business Education, Policy Commission for Business and Economic Education, Business Professionals of America, Future Business Leaders of America, Delta Pi Epsilon, National Educational Technology Standards, Industry Standards and Work Keys

Keyboarding

Standard 2.0

The student will operate the keyboard using the touch system.

Learning Expectations The student will:

2.1 Demonstrate correct body and hand position for keyboarding. 2.2 Apply the touch system to develop basic keyboarding skills on the alphabetic and numeric keyboard.

Performance Standards: Evidence Standard is Met

The student:

-  Applies correct body and hand position for keyboarding.
-  Uses the correct touch system to reach the alphabetic and numeric keys.

Sample Performance Task

-  Using the touch system, key the alphabet and numbers 1 through 10.
-  Using a technique check sheet, evaluate your techniques using the keyboard.

Integration/Linkages

Language Arts, SCANS (*The Secretary's Commission on Achieving Necessary Skills*), National Standards for Business Education, Policy Commission for Business and Economic Education, Business Professionals of America, Future Business Leaders of America, Delta Pi Epsilon, National Educational Technology Standards, Industry Standards and Work Keys

Keyboarding

Standard 3.0

The student will apply language arts skills to prepare business documents.

Learning Expectations

The students will:

- 3.1 Apply rules for spelling.
- 3.2 Apply rules for punctuation and capitalization.
- 3.3 Apply rules when using abbreviations.
- 3.4 Use reference materials.
- 3.5 Apply language arts skills (mailability standards) to all keyed documents.

Performance Standard: Evidence Standard is Met

The student:

-  Applies spelling, punctuation and capitalization rules.
-  Uses correct sentence structure in composing, keying and formatting a paragraph. The paragraph must meet mailability standards.

Sample Performance Task

-  Compose and key a one-page report about a person who has influenced your life using acceptable standards for grammar, punctuation, capitalization, word usage and number expression.
-  Print one-page report, edit and use proofreaders' marks to indicate all errors in content, format, spelling, punctuation and grammar. Correct errors and print.

Integration/Linkages

Language Arts, Mathematics, SCANS (*The Secretary's Commission on Achieving Necessary Skills*), National Standards for Business Education, Policy Commission for Business and Economic Education, Business Professionals of America, Future Business Leaders of America, Delta Pi Epsilon, National Educational Technology Standards, Industry Standards and Work Keys

Keyboarding

Standard 4.0

The student will demonstrate speed and accuracy using the touch system of keying.

Learning Expectations

The student will:

- 4.1 Exhibit proper response patterns for gaining speed.
- 4.2 Demonstrate proficiency and speed in keying straight copy.
- 4.3 Produce mailable copy.
- 4.4 Apply typography, layout and design rules.
- 4.5 Produce evidence of skill in sentence and paragraph writing.
- 4.6 Edit rough-draft documents using proofreader marks.

Performance Standards: Evidence Standard is Met

The student:

-  Keys a minimum of 25 NWAM on a 3-minute timed writing.
-  Keys mailable copy from rough-draft and script materials.
-  Keys and edits documents using proofreaders' marks.

Sample Performance Task

Perform daily drills on sentences and paragraphs from straight copy, script and rough-draft materials.

Integration/Linkages

Language Arts, *SCANS (The Secretary's Commission on Achieving Necessary Skills)*, National Standards for Business Education, Policy Commission for Business and Economic Education, Business Professionals of America, Future Business Leaders of America, Delta Pi Epsilon, National Educational Technology Standards, Industry Standards and Work Keys

Keyboarding

Standard 5.0

The student will format text.

Learning Expectations

The student will:

- 5.1 Plan and set margins.
- 5.2 Plan and set tab stops.
- 5.3 Plan and set indents and hanging indents.
- 5.4 Plan and set decimal tab stops.
- 5.5 Center text horizontally.
- 5.6 Center text vertically.
- 5.7 Format page numbers using headers and footers.
- 5.8 Plan and center words, lines and problems vertically and horizontally.
- 5.9 Key using the touch system at acceptable speed and accuracy levels.

Performance Standard: Evidence Standard is Met

The student:

-  Keys a document with single and double digit numbers and wraparound text, applying formatting functions for setting margins; setting indent, decimal, left, center and right tabs; setting paragraph spacing, page break or section break; and keying headers and footer to include page number.
-  Keys and centers an announcement horizontally and vertically.
-  Keys one half-page, two-paragraph mailable document with a centered title in 10 minutes.

Sample Performance Task

-  From a rough-draft copy, key and format a list of class members with names, addresses, telephone numbers and apply vertical and horizontal centering. Document must meet mailability standards.
-  Key a list of questions using typography rules and formatting functions.

Integration/Linkages

Language Arts, Mathematics, SCANS (*The Secretary's Commission on Achieving Necessary Skills*), National Standards for Business Education, Policy Commission for Business and Economic Education, Business

Professionals of America, Future Business Leaders of America, Delta Pi Epsilon, National Educational Technology Standards, Industry Standards and Work Keys

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8.

Tennessee Department of Education

Keyboarding

Standard 6.0

The student will key business documents.

Learning Expectations

The student will:

- 6.1 Demonstrate proper keying and formatting technique for business documents.
- 6.2 Compose, key and format information using a keyboard.
- 6.3 Proofread documents for accuracy, content, grammar, spelling and punctuation.
- 6.4 Make changes using revision or tracking mode.

Performance Standards: Evidence Standard is Met

The student:

-  Uses the touch system and word processing software to create, modify, store, retrieve and print documents.
-  Keys and formats personal business letters, business letters, memorandums and other business documents and reports applying mailable standards.
-  Composes, organizes, edits, revises documents at the keyboard applying typography and formatting rules and functions.
-  Evaluates the appearance and accuracy of documents.
-  Stores documents on diskette and prints hard copy.
-  Edits and retrieves copy, makes changes using the revision mode, proofs revisions, accepts revisions, saves and prints hard copy.
-  Designs documents such as a newsletter with three-columns, headers and footers.

Sample Performance Task

Using page layout produce and print an article in landscape of chapter activities to be published in the school newspaper.

Integration/Linkages

Language Arts, Mathematics, SCANS (*The Secretary's Commission on Achieving Necessary Skills*), National Standards for Business Education, Policy Commission for Business and Economic Education, Business

Professionals of America, Future Business Leaders of America, Delta Pi Epsilon, National Educational Technology Standards, Industry Standards and Work Keys

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9.

Tennessee Department of Education

Keyboarding

Standard 7.0

The student will demonstrate organizational and professional leadership skills.

Learning Expectations

The student will:

- 7.1 Demonstrate self-initiative through group projects.
- 7.2 Examine the value of leadership skills.
- 7.3 Illustrate image building and public relations techniques.
- 7.4 Assess decision-making skills.
- 7.5 Demonstrate effective teamwork and critical analysis applying conflict resolution techniques.
- 7.6 Demonstrate parliamentary procedure skills through group activities.
- 7.7 Analyze the goals and apply principles of Business Professionals of America and/or Future Business Leaders of America.

Performance Standards: Evidence Standard is Met

The student:

-  Researches, analyzes, composes, keys, formats and prints the attributes of a leader.
-  Applies effective image-building and public relations techniques.
-  Composes, keys and formats informative articles for publication in local and/or state publications.
-  Organizes and manages a team presentation on leadership.
-  Practices parliamentary procedure skills through group activities.
-  Makes a two-minute report on an assigned keyboarding topic.
-  Participates in Business Professionals of America and/or Future Business Leaders of America.

Sample Performance Task

-  Create, key, format, edit and revise an article about local chapter activities to be published in the school newspaper.
-  Researched and prepare a presentation on copyright laws.

Integration/Linkages

Language Arts, Art, SCANS (*The Secretary's Commission on Achieving Necessary Skills*), National Standards for Business Education, Policy Commission for Business and Economic Education, Business

Professionals of America, Future Business Leaders of America, Delta Pi
Epsilon, National

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10.

Tennessee Department of Education

Keyboarding

Educational Technology Standards, Industry Standards, Work Keys,
Business Professionals of America Chapter Management Reference
and/or Future Business Leaders of America Chapter Handbook

Keyboarding -1

Information Technology Keyboarding	School Year _____	Student: _____	Grade: _____
Course Code # 3710	Term: ____ Fall ____ Spring	Teacher: _____	School: _____
½ Credit		Number of Competencies in Course: 37	
Prerequisites: None		Number of Competencies Mastered:	
Recommended Prerequisite: Touch Keyboarding		Percent of Competencies Mastered:	

Standard 1.0 The student will operate and maintain the workstation.

Learning Expectations	Check the appropriate Mastery or Non-Mastery	Mastery	Non-Mastery
1.1 Interpret computer and keyboarding terminology.			
1.2 Manage the computer system and related software.			
1.3 Interpret the copyright and the ethical issues involved in using a computerized workstation.			
1.4 Analyze copyright laws.			

Standard 2.0 The student will operate the keyboard using the touch system.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
2.1 Demonstrate correct body and hand position for keyboarding.			
2.2 Apply the touch system to develop basic keyboarding skills on the alphabetic and numeric keyboard.			

Standard 3.0 The student will apply language arts skills to prepare business documents.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
3.1 Apply rules for spelling.			
3.2 Apply rules for punctuation and capitalization.			
3.3 Apply rules when using abbreviations.			
3.4 Use reference materials.			
3.5 Apply language arts skills (mailability standards) to all keyed documents.			

Standard 4.0 The student will demonstrate speed and accuracy using the touch system of keying.

Learning Expectations	Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
4.1 Exhibit proper response patterns for gaining speed.			
4.2 Demonstrate proficiency and speed in keying straight copy.			
4.3 Produce mailable copy.			
4.4 Apply typography, layout and design rules.			
4.5 Produce evidence of skill in sentence and paragraph writing.			
4.6 Edit rough-draft documents using proofreader marks.			

Standard 5.0		The student will format text.	
Learning Expectations		Check the appropriate Mastery or Non-Mastery column	
		Mastery	Non-Mastery
5.1	Plan and set margins.		
5.2	Plan and set tab stops.		
5.3	Plan and set indents and hanging indents.		
5.4	Plan and set decimal tab stops.		
5.5	Center text horizontally.		
5.6	Center text vertically.		
5.7	Format page numbers using headers and footers.		
5.8	Plan and center words, lines and problems vertically and horizontally.		
5.9	Key using the touch system at acceptable speed and accuracy levels.		

Keyboarding -2

Standard 6.0 The student will key business documents.

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
6.1	Demonstrate proper keying and formatting technique for business documents.			
6.2	Compose, key and format information using a keyboard.			
6.3	Proofread documents for accuracy, content, grammar, spelling and punctuation.			
6.4	Make changes using revision or tracking mode.			

Standard 7.0 The student will demonstrate organizational and professional leadership skills.

Learning Expectations		Check the appropriate Mastery or Non-Mastery column	Mastery	Non-Mastery
7.1	Demonstrate self-initiative through group projects.			
7.2	Examine the value of leadership skills.			
7.3	Illustrate image building and public relations techniques.			
7.4	Assess decision-making skills.			
7.5	Demonstrate effective teamwork and critical analysis applying conflict resolution techniques.			
7.6	Demonstrate parliamentary procedure skills through group activities.			
7.7	Analyze the goals and apply principles of Business Professionals of America and/or Future Business Leaders of America.			

Additional comments: _____

This material found at: <http://www.state.tn.us/education/vebikeybdvocstudprof.pdf>

Retrieved March 2003

ED 3040-40

Texas

Source: Texas Student Standards - 2003

<http://www.tea.state.tx.us/technology/ta/standards.html>

STUDENT STANDARDS

Technology Applications TEKS (K-12) and Guidelines (PreK)

The Technology Applications Texas Essential Knowledge and Skills (TEKS) found in 19 TAC Chapter 126 describe what students should know and be able to do using technology. As a part of the enrichment curriculum, These TEKS are to be used as guidelines for providing instruction. The goal of the Technology Applications TEKS is for students to gain technology-based knowledge and skills and to apply them to all curriculum areas at all grade levels. There are benchmark years at Grades 2, 5, and 8 with courses specified at the high school level. The TEKS are organized with four common strands for Grades K-12: Foundations, Information Acquisition, Work in Solving Problems, and Communication.

The TEKS standards follow:

Grades K-2

Students gain basic skills such as inputting information, beginning touch keyboarding and becoming familiar with the computer. Using technology, students access information that can include text, audio, video, and graphics. They use computers and related technology to make presentations and prepare projects for foundation curriculum areas.

Grades 3-5

Students use proper keyboarding techniques and acquire information by selecting the most appropriate search strategies. Students use word processing, graphics, databases, spreadsheets, simulations, multimedia, and telecommunications. They solve problems and communicate information in various formats and to a variety of audiences and evaluate their results.

Grades 6-8

Students become fluent in using multiple software applications and applying them across the curriculum. They build on the Grades 3-5 knowledge and skills. The students continue to demonstrate keyboarding proficiency in technique and posture while building speed. The TEKS can be taught integrated into other areas (such as English Language Arts and Reading, Mathematics, Social Studies, and Science), as a separate class, or both.

Grades 9-12

Students have a variety of options from the adopted courses which allow for growth, specialization, integration into other curriculum areas, and preparation for the technological world. The high school courses in Technology Applications, Chapter 126 include:
Computer Science I, Computer Science II, Desktop Publishing, Digital

Graphics/Animation, Multimedia, Video Technology, Web Mastering, and Independent Study in Technology Applications.

In addition, there are guidelines for Prekindergarten:

Grades PreK

Prekindergarten guidelines for Technology Applications were made available to schools in December 1999. They articulate what three- and four- year old students should know and be able to do using technology.

Texas

Source: retrieved from: Chapter 120. Texas Essential Knowledge and Skills for Business Education Texas Administrative Code (TAC), Title 19, Part II Chapter 120. Texas Essential Knowledge and Skills for Business Education – 2003

<http://www.tea.state.tx.us/rules/tac/chapter120/index.html>

Chapter 120. Texas Essential Knowledge and Skills for Business Education Texas Administrative Code (TAC), Title 19, Part II Chapter 120. Texas Essential Knowledge and Skills for Business Education

Subchapter A. Middle School

- \$120.1.Implementation of Texas Essential Knowledge and Skills for Business Education, Middle School.
- \$120.2.Introduction to Business Support Systems.
- \$120.3.Business Venture.
- \$120.4.Introduction to Keyboarding.
- \$120.5.Introduction to Recordkeeping.

Subchapter B. Exploratory, High School

- \$120.21.Implementation of Texas Essential Knowledge and Skills for Business Education, Exploratory, High School.
- \$120.22.Business Communications (One-Half to One Credit).
- \$120.23.Business Computer Information Systems I (One-Half to One Credit).
- \$120.24.Business Support Systems (One-Half to One Credit).
- \$120.25.Introduction To Business (One-Half to One Credit).
- \$120.26.Keyboarding (One-Half to One Credit).
- \$120.27.Recordkeeping (One-Half to One Credit).

Subchapter C. Technical, High School

- \$120.41.Implementation of Texas Essential Knowledge and Skills for Business Education, Technical, High School.
- \$120.42.Accounting I (One-Half to One Credit).
- \$120.43.Banking and Financial Systems (One-Half Credit).
- \$120.44.Business Image Management and Multimedia (One-Half to One Credit).
- \$120.45.Business Law (One-Half to One Credit).
- \$120.46.Business Management (One-Half Credit).
- \$120.47.Business Ownership (One-Half Credit).
- \$120.48.Telecommunications and Networking (One-Half to One Credit).
- \$120.49.Word Processing Applications (One-Half to One Credit).

Subchapter D. Comprehensive or Work Based, High School

- \$120.61.Implementation of Texas Essential Knowledge and Skills for Business Education, Comprehensive or Work Based, High School.
- \$120.62.Accounting II (One-Half to Three Credits).
- \$120.63.Administrative Procedures (One to Three Credits).
- \$120.64.Business Computer Information Systems II (One-Half to Three Credits).
- \$120.65.Business Computer Programming (One-Half to Three Credits).
- \$120.66.International Business (One-Half to Three Credits).

Subchapter E. Research Based, High School

§120.81.Implementation of Texas Essential Knowledge and Skills for Business Education, Research Based, High School.

§120.82.Business Education Independent Study (One-Half to One Credit).

Virginia

Source: Computer/Technology Standards by the End of Grade Five: - 2003

<http://www.pen.k12.va.us/VDOE/Superintendent/Sols/comptec5.pdf>

Computer/Technology Standards by the End of Grade Five

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

Minimum skills that students should acquire by the end of Grade 5 include the following:

- C/T5.1 The student will demonstrate a basic understanding of computer theory including bits, bytes, and binary logic.

- C/T5.2 The student will develop basic technology skills.
 - * Develop a basic technology vocabulary that includes cursor, software, memory, disk drive, hard drive, and CD-ROM.
 - * Select and use technology appropriate to tasks.
 - * Develop basic keyboarding skills.
 - * Operate peripheral devices.
 - * Apply technologies to strategies for problem solving and critical thinking.

- C/T5.3 The student will process, store, retrieve, and transmit electronic information.
 - * Use search strategies to retrieve electronic information using databases, CD-ROMs, videodiscs, and telecommunications.
 - * Use electronic encyclopedias, almanacs, indexes, and catalogs.
 - * Use local and wide-area networks and modem-delivered services to access information from electronic databases.
 - * Describe advantages and disadvantages of various computer processing, storage, retrieval, and transmission techniques.

- C/T5.4 The student will communicate through application software.
 - * Create a 1-2 page document using word processing skills, writing process steps, and publishing programs.
 - * Use simple computer graphics and integrate graphics into word-processed documents.
 - * Create simple databases and spreadsheets to manage information and create reports.
 - * Use local and worldwide network communication systems.

Source: Computer/Technology Standards by the **End of Grade Eight - 2003**
<http://www.pen.k12.va.us/VDOE/Superintendent/Sols/comptec8.pdf>

Computer/Technology Standards by the **End of Grade Eight**

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

Minimum skills that students should acquire by the end of Grade 8 include the following:

- C/T8.1 The student will communicate through application software.
- * Compose and edit a multi page document at the keyboard, using word processing skills and writing process steps.
 - * Communicate with spreadsheets by entering data and setting up formulas, analyzing data, and creating graphs or charts to visually represent data.
 - * Communicate with databases by defining fields and entering data, sorting, and producing reports in various forms.
 - * Use advanced publishing software, graphics programs, and scanners to produce page layouts.
 - * Integrate databases, graphics, and spreadsheets into word-processed documents.
- C/T8.2 The student will communicate through networks and telecommunication.
- * Use local and worldwide network communication systems.
 - * Develop hypermedia - home page - documents that can be accessed by worldwide networks.
- C/T8.3 The student will have a basic understanding of computer processing, storing, retrieval and transmission technologies and a practical appreciation of the relevant advantages and disadvantages of various processing, storage, retrieval, and transmission technologies.
- C/T8.4 The student will process, store, retrieve, and transmit electronic information.
- * Use search strategies to retrieve electronic information.
 - * Use electronic encyclopedias, almanacs, indexes, and catalogs to retrieve and select relevant information.
 - * Use laser discs with a computer in an interactive mode.
 - * Use local and wide-area networks and modem-delivered services to access and retrieve information from electronic databases.
 - * Use databases to perform research.

Source: Computer/Technology Standards
by the End of Grade Twelve 2003 -
<http://www.pen.k12.va.us/VDOE/Superintendent/Sols/comptec12.html>

Computer/Technology Standards by the End of Grade Twelve

The Computer/Technology Standards by the End of Grades Five and Eight identify technology skills for improving student learning through the integration of technology across the curriculum. Mastery of these skills results in students who are both computer literate and competent in the application of technology tools to support their learning needs.

In grades nine through twelve, technology continues to be integrated across the curriculum. The goal is that students in these grades achieve a higher level of mastery in the application of technology in their learning. The following standards identify essential skills for the student's appropriate use of existing and emerging technology tools for communication, productivity, management, research, problem-solving, and decision making.

C/T12.1 The Student will demonstrate a basic understanding of fundamental computer operations and concepts.

- Successfully operate a multimedia computer system with related peripheral devices.
- Demonstrate touch-typing skills in computer use.
- Use terminology related to computers and technology appropriately in written and oral communications.
- Describe how imaging devices may be used with computer systems.
- Describe how computers may be connected to form a telecommunication network.
- Analyze and solve simple hardware and software problems
- Identify new and emerging technologies.

C/T12.2 The student will use application software to accomplish a variety of learning tasks.

- Use advanced features of word processing, desktop publishing, graphics programs, and utilities in learning activities.
- Use spreadsheets for analyzing, organizing and displaying numeric data graphically.
- Design and manipulate databases and generate customized reports.
- Use features of applications that integrate word processing, database, spreadsheet, telecommunication, and graphics.
- Identify, select, and integrate video and digital images in varying formats for creating multi-media presentations, publications and/or other products.
- Select, evaluate, and use appropriate technology for research and data collection.

- Apply specific-purpose electronic devices (such as, a graphing calculator, scientific probeware, or multi-function keyboards) in appropriate content areas.

C/T12.3 The student will develop skills in the use of telecommunications networks.

Use local, wide area and worldwide network communication systems to access, analyze, interpret, and synthesize information.

- Compare and contrast the use of local area networks, wide area networks and worldwide networks.
- Access and use telecommunications tools and resources for information sharing, remote information access and retrieval, and multi-media/hypermedia publishing.
- Demonstrate an understanding of the concepts of broadcast instruction, audio/video conferencing, and other distance learning applications.
- Explain legal, personal safety, network etiquette, and ethical behaviors regarding the use of technology and information.

C/T12.4 The student will demonstrate skill in the selection and use of appropriate technologies to gather, process and analyze data and to report information related to an investigation.

- Design and use a wide range of effective search strategies to acquire information.
- Use a wide variety of electronic media and databases to search for and retrieve information.
- Evaluate the usefulness, appropriateness, currency, and reliability of acquired information.
- Select appropriate technology for communicating information for an intended purpose and audience.
- Utilize a variety of media and resources in collaboration with peers, experts, and other to design a learning activity and/or presentation.
- Appropriately cite electronic resources in gathering information.
- Apply Copyright and Fair Use Guidelines in reporting information.

Source – 2003/2004 Student Competency Record - 2003
<http://www.cteresource.org/VERSO/Keyboarding%20%28MS%29%2001-03/Keyboarding%20%28MS%29%2001-03%20SCR.doc>

**2003/2004 Student Competency Record
 Keyboarding (Middle School)
 6150-6 - 6 Weeks**

Student	School Year
School	Teacher Signature

Traditional letter or numerical grades do not provide adequate documentation of student achievement in competency-based education; therefore, the Virginia Standards for CBE require a recording system to provide information about competencies achieved to employer, student-employee, and teacher. The Student Competency Record provides a means for keeping track of student progress. Ratings are assigned by the teacher for classroom competency achievement and by the teacher-coordinator in conjunction with the training sponsor when competence is evaluated on the job.

Note: Students with and Individualized Education Plan (IEP) or an Individualized Student Alternative Education Plan (ISAEF) will be rated, using the following scale, only on the competencies identified in their IEP or ISAEF.

...RATING SCALE...
1 - Can teach others
2 - Can perform without supervision
3 - Can perform with limited supervision
4 - Can perform with supervision
5 - Cannot perform

6150-6 6 Weeks	Keyboarding (Middle School) TASKS/COMPETENCIES		Date	Rating
	Keyboarding (Middle School)			
•	BUS6150-6.001	Identify computer system components.		
•	BUS6150-6.002	Boot, access, and exit operating system and software.		
•	BUS6150-6.003	Input data and commands using peripherals (e.g., keyboard, light pen, mouse, scanner, and voice recognition).		
•	BUS6150-6.004	Key alphabetic, numeric, and symbol information using a touch system and correct techniques.		
•	BUS6150-6.005	Manipulate data/software/operating system using function keys, icons, bars, and pull-down menus.		

•	BUS6150 -6.006	Use file and disk management techniques, such as copy, move, store, rename, retrieve, save, delete, and create/manipulate directories.		
•	BUS6150 -6.007	Improve keyboarding techniques.		
•	BUS6150 -6.008	Increase keyboarding speed and accuracy.		
•	BUS6150 -6.009	Proofread copy.		
•	BUS6150 -6.010	Edit copy.		
•	BUS6150 -6.011	Key and format letters, memoranda, reports, outlines, and tables.		
	BUS6150 -6.012	Compose and format letters, memoranda, reports, outlines, and tables, using the English writing process steps.		
	BUS6150 -6.013	Key and format addresses on labels and envelopes.		
	BUS6150 -6.014	Produce documents incorporating simple graphic elements		
•	BUS6150 -6.015	Maintain work station, equipment, materials, and supplies.		
	BUS6150 -6.016	Obtain assistance for preparing documents via electronic and hard copy references and documentation (e.g., help screen, spell check, user's manual, dictionary, grammar check, thesaurus, Internet search).		
•	BUS6150 -6.017	Describe ergonomic guidelines related to safe computer use.		
	BUS6150 -6.018	Identify the purposes and goals of the student organization.		
	BUS6150 -6.019	Participate in course activities sponsored by the student organization (e.g., meetings, programs, and other projects).		
	BUS6150 -6.020	Investigate careers.		
	BUS6150 -6.021	Develop a résumé.		
	BUS6150 -6.022	Complete a job application form.		
	BUS6150 -6.023	Create a portfolio containing representative examples of each type of document produced by the student New Task		
•	BUS6150 -6.024	Identify potential employment barriers for nontraditional groups and ways to overcome the barriers.		

2003/2004 Student Competency Record
Keyboarding (Middle School)
6150-9 - 9 Weeks

Student	School Year
School	Teacher Signature

Traditional letter or numerical grades do not provide adequate documentation of student achievement in competency-based education; therefore, the Virginia Standards for CBE require a recording system to provide information about competencies achieved to employer, student-employee, and teacher. The Student Competency Record provides a means for keeping track of student progress. Ratings are assigned by the teacher for classroom competency achievement and by the teacher-coordinator in conjunction with the training sponsor when competence is evaluated on the job.

Note: Students with and Individualized Education Plan (IEP) or an Individualized Student Alternative Education Plan (ISAEF) will be rated, using the following scale, only on the competencies identified in their IEP or ISAEF.

...RATING SCALE...

- 1 - Can teach others**
- 2 - Can perform without supervision**
- 3 - Can perform with limited supervision**
- 4 - Can perform with supervision**
- 5 - Cannot perform**

6150-9 9 Weeks	Keyboarding (Middle School) TASKS/COMPETENCIES		Date	Rating
	Keyboarding (Middle School)			
•	BUS6150-9.001	Identify computer system components.		
•	BUS6150-9.002	Boot, access, and exit operating system and software.		
•	BUS6150-9.003	Input data and commands using peripherals (e.g., keyboard, light pen, mouse, scanner, and voice recognition).		
•	BUS6150-9.004	Key alphabetic, numeric, and symbol information using a touch system and correct techniques.		
•	BUS6150-9.005	Manipulate data/software/operating system using function keys, icons, bars, and pull-down menus.		
•	BUS6150-9.006	Use file and disk management techniques, such as copy, move, store, rename, retrieve, save, delete, and create/manipulate directories.		
•	BUS6150-9.007	Improve keyboarding techniques.		

•	BUS6150-9.008	Increase keyboarding speed and accuracy.		
•	BUS6150-9.009	Proofread copy.		
•	BUS6150-9.010	Edit copy.		
•	BUS6150-9.011	Key and format letters, memoranda, reports, outlines, and tables.		
	BUS6150-9.012	Compose and format letters, memoranda, reports, outlines, and tables, using the English writing process steps.		
	BUS6150-9.013	Key and format addresses on labels and envelopes.		
•	BUS6150-9.014	Produce documents incorporating simple graphic elements		
•	BUS6150-9.015	Maintain work station, equipment, materials, and supplies.		
•	BUS6150-9.016	Obtain assistance for preparing documents via electronic and hard copy references and documentation (e.g., help screen, spell check, user's manual, dictionary, grammar check, thesaurus, Internet search).		
•	BUS6150-9.017	Describe ergonomic guidelines related to safe computer use.		
	BUS6150-9.018	Identify the purposes and goals of the student organization.		
	BUS6150-9.019	Participate in course activities sponsored by the student organization (e.g., meetings, programs, and other projects).		
	BUS6150-9.020	Investigate careers.		
	BUS6150-9.021	Develop a résumé.		
	BUS6150-9.022	Complete a job application form.		
	BUS6150-9.023	Create a portfolio containing representative examples of each type of document produced by the student.New Task		
•	BUS6150-9.024	Identify potential employment barriers for nontraditional groups and ways to overcome the barriers.		

2003/2004 Student Competency Record
Keyboarding (Middle School)
6150-12 - 12 Weeks

Student	School Year
School	Teacher Signature

Traditional letter or numerical grades do not provide adequate documentation of student achievement in competency-based education; therefore, the Virginia Standards for CBE require a recording system to provide information about competencies achieved to employer, student-employee, and teacher. The Student Competency Record provides a means for keeping track of student progress. Ratings are assigned by the teacher for classroom competency achievement and by the teacher-coordinator in conjunction with the training sponsor when competence is evaluated on the job.

Note: Students with and Individualized Education Plan (IEP) or an Individualized Student Alternative Education Plan (ISAEF) will be rated, using the following scale, only on the competencies identified in their IEP or ISAEF.

...RATING SCALE...

- 1 - Can teach others**
- 2 - Can perform without supervision**
- 3 - Can perform with limited supervision**
- 4 - Can perform with supervision**
- 5 - Cannot perform**

6150-12 12 Weeks	Keyboarding (Middle School) TASKS/COMPETENCIES		Date	Rating
	Keyboarding (Middle School)			
•	BUS6150-12.001	Identify computer system components.		
•	BUS6150-12.002	Boot, access, and exit operating system and software.		
•	BUS6150-12.003	Input data and commands using peripherals (e.g., keyboard, light pen, mouse, scanner, and voice recognition).		
•	BUS6150-12.004	Key alphabetic, numeric, and symbol information using a touch system and correct techniques.		
•	BUS6150-12.005	Manipulate data/software/operating system using function keys, icons, bars, and pull-down menus.		
•	BUS6150-12.006	Use file and disk management techniques, such as copy, move, store, rename, retrieve, save, delete, and create/manipulate directories.		

•	BUS6150-12.007	Improve keyboarding techniques.		
•	BUS6150-12.008	Increase keyboarding speed and accuracy.		
•	BUS6150-12.009	Proofread copy.		
•	BUS6150-12.010	Edit copy.		
•	BUS6150-12.011	Key and format letters, memoranda, reports, outlines, and tables.		
•	BUS6150-12.012	Compose and format letters, memoranda, reports, outlines, and tables, using the English writing process steps.		
	BUS6150-12.013	Key and format addresses on labels and envelopes.		
•	BUS6150-12.014	Produce documents incorporating simple graphic elements		
•	BUS6150-12.015	Maintain work station, equipment, materials, and supplies.		
•	BUS6150-12.016	Obtain assistance for preparing documents via electronic and hard copy references and documentation (e.g., help screen, spell check, user's manual, dictionary, grammar check, thesaurus, Internet search).		
•	BUS6150-12.017	Describe ergonomic guidelines related to safe computer use.		
	BUS6150-12.018	Identify the purposes and goals of the student organization.		
	BUS6150-12.019	Participate in course activities sponsored by the student organization (e.g., meetings, programs, and other projects).		
•	BUS6150-12.020	Investigate careers.		
•	BUS6150-12.021	Develop a résumé.		
•	BUS6150-12.022	Complete a job application form.		
	BUS6150-12.023	Create a portfolio containing representative examples of each type of document produced by the student. New Task		
•	BUS6150-12.024	Identify potential employment barriers for nontraditional groups and ways to overcome the barriers.		

2003/2004 Student Competency Record
Keyboarding (Middle School)
6150-18 - 18 Weeks

Student	School Year
School	Teacher Signature

Traditional letter or numerical grades do not provide adequate documentation of student achievement in competency-based education; therefore, the Virginia Standards for CBE require a recording system to provide information about competencies achieved to employer, student-employee, and teacher. The Student Competency Record provides a means for keeping track of student progress. Ratings are assigned by the teacher for classroom competency achievement and by the teacher-coordinator in conjunction with the training sponsor when competence is evaluated on the job.

Note: Students with and Individualized Education Plan (IEP) or an Individualized Student Alternative Education Plan (ISAEF) will be rated, using the following scale, only on the competencies identified in their IEP or ISAEF.

...RATING SCALE...

- 1 - Can teach others**
- 2 - Can perform without supervision**
- 3 - Can perform with limited supervision**
- 4 - Can perform with supervision**
- 5 - Cannot perform**

6150-18 18 Weeks	Keyboarding (Middle School) TASKS/COMPETENCIES		Date	Rating
	Keyboarding (Middle School)			
•	BUS6150 -18.001	Identify computer system components.		
•	BUS6150 -18.002	Boot, access, and exit operating system and software.		
•	BUS6150 -18.003	Input data and commands using peripherals (e.g., keyboard, light pen, mouse, scanner, and voice recognition).		
•	BUS6150 -18.004	Key alphabetic, numeric, and symbol information using a touch system and correct techniques.		
•	BUS6150 -18.005	Manipulate data/software/operating system using function keys, icons, bars, and pull-down menus.		
•	BUS6150 -18.006	Use file and disk management techniques, such as copy, move, store, rename, retrieve, save, delete, and create/manipulate directories.		
•	BUS6150	Improve keyboarding techniques.		

	-18.007			
•	BUS6150 -18.008	Increase keyboarding speed and accuracy.		
•	BUS6150 -18.009	Proofread copy.		
•	BUS6150 -18.010	Edit copy.		
•	BUS6150 -18.011	Key and format letters, memoranda, reports, outlines, and tables.		
•	BUS6150 -18.012	Compose and format letters, memoranda, reports, outlines, and tables, using the English writing process steps.		
•	BUS6150 -18.013	Key and format addresses on labels and envelopes.		
•	BUS6150 -18.014	Produce documents incorporating simple graphic elements		
•	BUS6150 -18.015	Maintain work station, equipment, materials, and supplies.		
•	BUS6150 -18.016	Obtain assistance for preparing documents via electronic and hard copy references and documentation (e.g., help screen, spell check, user's manual, dictionary, grammar check, thesaurus, Internet search).		
•	BUS6150 -18.017	Describe ergonomic guidelines related to safe computer use.		
	BUS6150 -18.018	Identify the purposes and goals of the student organization.		
	BUS6150 -18.019	Participate in course activities sponsored by the student organization (e.g., meetings, programs, and other projects).		
•	BUS6150 -18.020	Investigate careers.		
•	BUS6150 -18.021	Develop a résumé.		
•	BUS6150 -18.022	Complete a job application form.		
•	BUS6150 -18.023	Create a portfolio containing representative examples of each type of document produced by the student. New Task		
•	BUS6150 -18.024	Identify potential employment barriers for nontraditional groups and ways to overcome the barriers.		

APPENDIX C

International Society for Technology in Education (ISTE) Standards and Profiles for Technology Literate Students

National Educational Technology Standards for Students (NETS) Technology Standards for All Students Core Technology Standards and Indicators

- I. BASIC OPERATIONS AND CONCEPTS
 - Students demonstrate a sound understanding of the nature and operation of technology systems.
 - Students are proficient in the use of technology.
- II. SOCIAL, ETHICAL, AND HUMAN ISSUES
 - Students understand the ethical, cultural, and societal issues related to technology.
 - Students practice responsible use of technology systems, information, and software.
 - Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.
- III. TECHNOLOGY PRODUCTIVITY TOOLS
 - Students use technology tools to enhance learning, increase productivity, and promote creativity.

- Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

IV. TECHNOLOGY COMMUNICATIONS TOOLS

- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

V. TECHNOLOGY RESEARCH TOOLS

- Students use technology to locate, evaluate, and collect information from a variety of sources.
- Students use technology tools to process data and report results.
- Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

VI. TECHNOLOGY PROBLEM-SOLVING AND DECISION-MAKING TOOLS

- Students use technology resources for solving problems and making informed decisions.
- Students employ technology in the development of strategies for solving problems in the real world.

SOURCE: International Society for Technology in Education (ISTE), National Educational Technology Standards for Teachers (Eugene, OR: ISTE, NETS Project, 2000).

Profiles for Technology Literate Students

(Numbers in parentheses at the end of each performance indicator refers to the standard from the Technology Standards for All Students)

Grades PreK-2

Prior to completion of Grade 2, students will:

1. Use input devices (e.g., mouse, keyboard, remote control) and output devices (e.g., monitor, printer) to successfully operate computers, VCRs, audio tapes, telephones, and other technologies. (1)
2. Use a variety of media and technology resources for directed and independent learning activities. (1, 3)
3. Communicate about technology using developmentally appropriate and accurate terminology. (1)
4. Use developmentally appropriate multimedia resources (e.g., interactive books, educational software, elementary multimedia encyclopedias) to support learning. (1)
5. Work cooperatively and collaboratively with peers, family members, and others when using technology in the classroom. (2)
6. Demonstrate positive social and ethical behaviors when using technology. (2)
7. Practice responsible use of technology systems and software. (2)
8. Create developmentally appropriate multimedia products with support from teachers, family members, or student partners. (3)

9. Use technology resources (e.g., puzzles, logical thinking programs, writing tools, digital camera, drawing tools) for problem solving, communication, and illustration of thoughts, idea, and stories. (3, 4, 5, 6)
10. Gather information and communicate with others using telecommunications, with support from teachers, family members, or student partners. (4)

Grades 3-5

Prior to completion of Grade 5, students will:

1. Use keyboards and other common input and output devices (including adaptive devices when necessary) efficiently and effectively. (1)
2. Discuss common uses of technology in daily life and the advantages and disadvantages those uses provide. (1, 2)
3. Discuss basic issues related to responsible use of technology and information and describe personal consequences of inappropriate use. (2)
4. Use general purpose productivity tools and peripherals to support personal productivity, remediate skills deficits, and facilitate learning throughout the curriculum.
5. Use technology tools (e.g., multimedia authoring, presentation, Web tools, digital cameras, scanners) for individual and collaborative writing, communication, and publishing activities to create knowledge products for audiences inside and outside the classroom. (3, 4)

6. Use telecommunications efficiently and effectively to access remote information, communicate with others in support of direct and independent learning, and pursue personal interests. (4)
7. Use telecommunications and online resources (e.g., e-mail, online discussions, Web environments) to participate in collaborative problem-solving activities for the purpose of developing solutions or products for audiences inside and outside the classroom. (4, 5)
8. Use technology resources (e.g., calculators, data collection probes, videos, educational software) for problem solving, self-directed learning, and extended learning activities. (5, 6)
9. Determine when technology is useful and select the appropriate tool(s) and technology resources to address a variety of tasks and problems. (5, 6)
10. Evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources. (6)

Grades 6-8

Prior to completion of Grade 8, students will:

1. Apply strategies for identifying and solving routine hardware and software problems that occur during everyday use. (1)
2. Demonstrate knowledge of current changes in information technologies and the effect those changes have on the workplace and society. (2)
3. Exhibit legal and ethical behaviors when using information and technology, and discuss consequences of misuse. (2)

4. Use content-specific tools, software, and simulations (e.g., environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research. (3, 5)
5. Apply productivity/multimedia tools and peripherals to support personal productivity, group collaboration, and learning throughout the curriculum. (3, 6)
6. Design, develop, publish, and present products (e.g., Web pages, videotapes) using technology resources that demonstrate and communicate curriculum concepts to audiences inside and outside the classroom. (4, 5, 6)
7. Collaborate with peers, experts, and others using telecommunications and collaborative tools to investigate curriculum-related problems, issues, and information, and to develop solutions or products for audiences inside and outside the classroom. (4, 5)
8. Select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems. (5, 6)
9. Demonstrate an understanding of concepts underlying hardware, software, and connectivity, and of practical applications to learning and problem solving. (1, 6)
10. Research and evaluate the accuracy, relevance, appropriateness, comprehensiveness, and bias of electronic information sources concerning real-world problems. (2, 5, 6)

Grades 9-12

Prior to completion of Grade 12, students will:

1. Identify capabilities and limitations of contemporary and emerging technology resources and assess the potential of these systems and services to address personal, lifelong learning, and workplace needs. (2)
2. Make informed choices among technology systems, resources, and services. (1, 2)
3. Analyze advantages and disadvantages of widespread use and reliance on technology in the workplace and in society as a whole. (2)
4. Demonstrate and advocate for legal and ethical behaviors among peers, family, and community regarding the use of technology and information. (2)
5. Use technology tools and resources for managing and communicating personal/professional information (e.g., finances, schedules, addresses, purchases, correspondence). (3, 4)
6. Evaluate technology-based options, including distance and distributed education, for lifelong learning. (5)
7. Routinely and efficiently use online information resources to meet needs for collaboration, research, publications, communications, and productivity. (4, 5, 6)
8. Select and apply technology tools for research, information analysis, problem solving, and decision making in content learning. (4, 5)
9. Investigate and apply expert systems, intelligent agents, and simulations in real-world situations. (3, 5, 6)

10. Collaborate with peers, experts, and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information, models, and other creative works. (4, 5, 6)
(ISTE, NETS, 2003)

APPENDIX D

E-Mail Correspondence

LOUISIANA REQUEST

Mona,

Thank you for your information. It has been most helpful in my quest.

Nancy

>===== Original Message From Mona Bickham <Mona.Bickham@LA.GOV> =====

>To see the business standards, click on the address below or just in case it doesn't work, at the departments home page choose ELECTIVES in the drop down box; then to the left, click on Career and Technical Education, the click on Business Education . . . The keyboarding are not separate, but standards 15-20 deal with various courses that have keyboarding skills required. Hope this helps.

><http://www.doe.state.la.us/DOE/asps/home.asp?I=ELECTIVES>

>

>-----Original Message-----

>From: Patricia Merrick

>To: Mona Bickham

>Subject: FW: keyboarding standards for Louisiana

>please respond

>-----Original Message-----

>From: npknox [npknox@utk.edu]

>To: Tenda Keel

>Subject: keyboarding standards for Louisiana

>

>Hi,

>

>I have visited your department of education website and I cannot find your keyboarding benchmarks or standards. I am looking for your benchmarks for students taking keyboarding. I am assuming that all students are required to take keyboarding before they graduate from high school. I looking in the Business and Information Technology area on the website. Can you refer me to the website that has the benchmarks for keyboarding or a person to contact for this information? If I can obtain it in hard copy format, could you please fax it to me at:

>

>Thanks,

>

>Nancy Knox

>Bearden High School

>Knoxville TN Business and Information Technology Teacher and Department Chair

>ABD Graduate Student, Instructional Technology, The University of Tennessee,

>Knoxville

TEXAS REQUEST

Kathy,

I do appreciate your taking the time to give me explicit instructions for keyboarding in the state of Texas. It has been most helpful to me.

Nancy Knox

>===== Original Message From "Mihalik, Kathleen" <kmihalik@tea.state.tx.us> =====

>Nancy,

>

>Keyboarding knowledge and skills are just one part of many technology skills taught in a continuum from grades K-12. There are benchmarks are grades 2, 5, and 8 and 12. (SEE BELOW)

>

>Keyboarding as a separate class is not required for students to graduate. Our expectation is that students have these skills and Computer Literacy skills prior to high school. The new No Child Left Behind legislation also has those expectations. All Texas students on all graduation plans since 1997 must take a required Technology Applications graduation credit course.

>

>I have provided links from our web site:

>

>Technology Applications Texas Essential Knowledge and Skills

>

><http://www.tea.state.tx.us/rules/tac/ch126toc.html>

>

>State web site for Technology Applications

>

><http://www.tea.state.tx.us/technology/ta/>

>

>Technology Applications Graduation Credit

>

><http://www.tea.state.tx.us/technology/ta/tacredit.html>

>

>The Technology Applications Texas Essential Knowledge and Skills (TEKS) found in 19 TAC Chapter 126 describe what students should know and be able to do using technology. As a part of the enrichment curriculum, these TEKS are to be used as guidelines for providing instruction. The goal of the Technology Applications TEKS is for students to gain technology-based knowledge and skills and to apply them to all curriculum areas at all grade levels. There are benchmark years at Grades 2, 5, and 8 with courses specified at the high school level. The TEKS are organized with four common strands for Grades K-12: Foundations, Information Acquisition, Work in Solving Problems, and Communication.

>

>The TEKS standards follow:

>

>Grades K-2

><<http://www.tea.state.tx.us/rules/tac/ch126.html#s1263>> Students gain basic skills such as inputting information, beginning touch keyboarding and becoming familiar with the computer. Using technology, students access information that can include text, audio, video, and graphics. They use computers and related technology to make presentations and prepare projects for foundation curriculum areas.

>

>Grades 3-5

><<http://www.tea.state.tx.us/rules/tac/ch126.html#s1263>> Students use proper keyboarding techniques and

acquire information by selecting the most appropriate search strategies. Students use word processing, graphics, databases, spreadsheets, simulations, multimedia, and telecommunications. They solve problems and communicate information in various formats and to a variety of audiences and evaluate their results.

>

>Grades 6-8

<<http://www.tea.state.tx.us/rules/tac/ch126.html#s12611>> Students become fluent in using multiple software applications and applying them across the curriculum. They build on the Grades 3-5 knowledge and skills. The students continue to demonstrate keyboarding proficiency in technique and posture while building speed. The TEKS can be taught integrated into other areas (such as English Language Arts and Reading, Mathematics, Social Studies, and Science), as a separate class, or both.

>

>Grades 9-12

<<http://www.tea.state.tx.us/rules/tac/ch126.html#s12621>> Students have a variety of options from the adopted courses which allow for growth, specialization, integration into other curriculum areas, and preparation for the technological world. The high school courses in Technology Applications, Chapter 126 include: Computer Science I, Computer Science II, Desktop Publishing, Digital Graphics/Animation, Multimedia, Video Technology, Web Mastering, and Independent Study in Technology Applications.

>

>In addition, there are guidelines for Prekindergarten:

>

>Grades PreK

<<http://www.tea.state.tx.us/curriculum/early/prekguide.html>> Prekindergarten guidelines for Technology Applications were made available to schools in December 1999. They articulate what three- and four- year old students should know and be able to do using technology.

>

>I hope this helps!

>

>Kathy Mihalik

>Educational Technology

>Texas Education Agency

>512.463.7322

>

>www.tea.state.tx.us/technology/ta

>

>-----Original Message-----

>From: npknox [npknox@utk.edu]

>To: Mihalik, Kathleen

>Subject: keyboarding standards for Texas

>

>Hi,

>

>I have visited your department of education website and I cannot find your keyboarding benchmarks or standards. I am looking for your benchmarks for students taking keyboarding. I am assuming that all students are required to take keyboarding before they graduate from high school. Also, what age/grade is keyboarding required? Can you refer me to the website that has the benchmarks for keyboarding or a person to contact for this information? If I can obtain it in hard copy format, could you

>please fax

>

>Thanks,

>Nancy

MISSISSIPPI REQUEST

I'm not totally sure, but I would refer them to Sherry Franklin, Program Coordinator, Business and Computer Technology in Vocational and Technical Education.

<http://www.mde.k12.ms.us/OVTE/INSTDEV/idvp.htm>

I don't have Ms. Franklin's telephone number but her email address is sfranklin@mde.k12.ms.us if you would like to send a message.

Hi,

I have visited your department of education website and I cannot find your keyboarding benchmarks or standards. I am looking for your benchmarks for students taking keyboarding. I am assuming that all students are required to take keyboarding before they graduate from high school. Also, what age/grade is keyboarding required? Can you refer me to the website that has the benchmarks for keyboarding or a person to contact for this information? If I can obtain it in hard copy format, could you please fax it to me at:

Thanks,

Nancy Knox
Bearden High School
Knoxville TN Business and Information Technology Teacher and Department Chair
ABD Graduate Student, Instructional Technology, The University of
Tennessee, Knoxville

Hi Nancy, (This was received 6/23/03)
Keyboarding is required in the 8th grade, along with computer applications and computer discovery.

April Roberson, M.S.
Foreign Language/Library Media/Business Technology Specialist
Office of Curriculum and Instruction
Mississippi Department of Education
359 North West Street
P. O. Box 771 Suite 330
Jackson, MS 39205-0771

phone: (601) 359-2586
fax: (601) 359-2040

Ms. Robertson,

I visited the Mississippi website and I could not find information pertaining to grade level implementation of courses. Could you tell me at what grade Keyboarding is offered and is it required?

Thanks,

Nancy

Nancy Knox
Doctoral Student; ABD Instructional Technology and Bearden High School Business and Information Technology Teacher and Department Chair

GEORGIA REQUEST

Could you or someone with your staff help the person below please? Thanks for your help.

Peggy Dennis
AskDOE
Georgia Department of Education
2054 Twin Towers East
205 Jesse Hill Jr. Drive S.E.
Atlanta, GA 30334
Phone: 1-800-311-3627
Fax: 404-651-6867
Website: <http://www.doe.k12.ga.us>

Hi,

I have visited your department of education website and I cannot find your keyboarding benchmarks or standards. I am looking for your benchmarks for students taking keyboarding. I am assuming that all students are required to take keyboarding before they graduate from high school. I looking in the Business and Information Technology area on the website. Can you refer me to the website that has the benchmarks for keyboarding or a person to contact for this information? If I can obtain it in hard copy format, could you please fax it to me at:

Thanks,

Nancy Knox
Bearden High School
Knoxville TN
Business and Information Technology Teacher and Department Chair
ABD Graduate Student, Instructional Technology, The University of Tennessee, Knoxville

Nancy Knox

KENTUCKY REQUEST

Ms. Powell,

Thank you for your information. I will look forward to a response from Ms. Durbin.

Nancy Knox

>===== Original Message From Gayla.Powell@mail.state.ky.us =====
>Our website is www.kyepsb.net. Keyboarding classes falls under certification for business and marketing, grades 5-12.
>
>Gayla Powell
>Program Manager
>Education Professional Standards Board, Division of Certification
>1024 Capital Center Drive, Suite 225, Frankfort, KY 40601, (502) 573-4606, Fax: (502) 573-1610

APPENDIX E

List of Southern Association of Schools and Colleges (SACS) Phone Numbers

The list of SACS phone numbers: Source: Southern Association of Colleges and Schools (2000). Standards Checklist: For Member Schools and Peer Review Teams Accreditation Standards 2000. Commission on Secondary and Middle Schools. Retrieved from <http://www.sacs.org/publ/sec/Checklists.pdf> on March 14, 2003.

Alabama:	1 877-823-2570
Florida:	1 800 865-9068
Georgia:	1 706 542-4056
Kentucky:	1 606 257-3786
Louisiana:	1 225 388-1352
Mississippi:	1 228 865-4548
North Carolina:	1 800 754-7672
South Carolina:	1 803 777-1139
Tennessee:	1 800 325-0410
Texas:	1 512 471-6660
Virginia:	1 540 831-5399

APPENDIX F

Material retrieved from: **Chart of States Using NETS -**

http://cnets.iste.org/docs/States_using_NETS.pdf last updated June 17, 2003



Use of NETS by State

National Educational Technology Standards (NETS) and the States

The *NETS for Students* were released in June 1998, *NETS for Teachers* in June 2000, and *NETS for Administrators (TSSA)* in November 2001. At the state level, 48 of the 51 states have adopted, adapted, aligned with, or otherwise referenced at least one set of standards in their state technology plans, certification, licensure, curriculum plans, assessment plans, or other official state documents. States that have adopted, adapted, aligned with, or referenced the NETS in state department of education documents are listed below. *Updated: June 17, 2003*

STU (A=adopted, adapted, or aligned with; R=referenced)	TCH	ADM	STATE	STU (A=adopted, adapted, or aligned with; R=referenced)	TCH	ADM	STATE
A	A	A	Alabama	A	A	A	Missouri
R	R	R	Alaska	A	A	A	Nebraska
A	A	A	Arizona		A		Nevada
A	A	A	Arkansas	R	A	A	New Hampshire
		R	California	A	A	A	New Jersey
A	A		Colorado		A		New Mexico
A	A	A	Connecticut	A	A	A	New York
A	A	A	Delaware	A		A	North Dakota
	A		District of Columbia	A		A	Ohio
A	A		Florida	A			Oklahoma
	A	A	Georgia	A		A	Oregon
A			Hawaii			A	Pennsylvania
	A		Idaho	A			Rhode Island
A	A	A	Illinois	A	A		South Carolina
	R	R	Indiana		A	A	South Dakota
A	A	A	Kansas		A	R	Tennessee
A	A	A	Kentucky	R	A	R	Texas
A	A	A	Louisiana	A			Utah
		R	Maine	A	A	A	Vermont
R	A	A	Maryland	A	R	R	Virginia
A	A		Massachusetts	A	A	A	Washington
A	A	A	Michigan	A	A	A	West Virginia
A	A	A	Minnesota	A		A	Wisconsin
A	A	A	Mississippi			A	Wyoming

VITA

Nancy Sue Phillips Knox was born in Lawton, Oklahoma on September 22, 1958. She moved to Knoxville, Tennessee in 1967 and attended South High School. She graduated from South High School in 1976. She went to The University of Tennessee, Knoxville and received a B.S. in Education in 1993 and a M.S. in Education with a major in Curriculum and Instruction with a major concentration in Instructional Media and Technology in 1998.

Nancy is currently pursuing her doctorate in Education, with a major in Education, with a major concentration in Instructional Technology at The University of Tennessee, Knoxville, Knoxville, Tennessee and will graduate Summer 2003. She has been employed with the Knox County School System for four years and is currently Department Chair for the Business and Information Technology Department at Bearden High School in Knoxville, Tennessee.