Keyboarding Methodology
Instructional Guide
for Teachers
and Administrators

Commonwealth of Virginia
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Resource: A Statement by the Policies Commission for Business and Economic Education
Introduction

The purpose of this publication is to provide assistance to instructors of keyboarding and administrators implementing keyboarding. Because individuals begin the task of teaching keyboarding with different levels of experience, materials presented are intended to help set up the program, to discuss teaching strategies for the program, to identify the location of competencies and curriculum frameworks, to provide direction for the selection of software instructional materials, and to identify ways in which the program may be structured.

Developing keyboarding skills is an integral part of an effective computer literacy program. The keyboard is an important tool for communicating and entering data into all kinds of technological systems that are electronic input devices. Keyboarding has become a necessary personal, academic, and professional skill. Projections indicate that most of today’s students will use keyboarding when they enter the work world—no matter what the field.

In Virginia schools, students have increasing opportunities to apply keyboarding in the writing process, using software that assists prewriting, composition, correction of mechanics, and style checking. Good keyboarding skills help students concentrate on the task of communicating effectively rather than on the task of entering data. Language arts and computer-based activities contribute to further development and maintenance of keyboarding skills.

The information in this publication is primarily directed to individuals who teach keyboarding at the middle school level; however, it will also be helpful for those who are involved with keyboarding at other levels. It is recognized that from the perspective of instructors at the middle school, there is already a great deal of pressure to work within a crowded curriculum. Emphasis is given to coordinating keyboarding instruction with language arts activities in the area of writing. If keyboarding equipment is available for students at that level, there is an opportunity to enhance and improve writing activities.

Research and experience have shown that students who have completed a keyboarding program have increased the volume of their writing and have significantly increased the amount of time they will spend on a writing activity at any one time. The results benefit both students and their instructors.

The Policies Commission for Business and Economic Education addressed the need for keyboarding in its Policy Statement 35. The position was stated in this way: “We believe that keyboarding should be required of all students. With the rapid expansion of computer usage, primarily electronic input devices, educational institutions should require that all students develop keyboarding skills. Keyboarding skills allow students to interface more efficiently with electronic input devices in educational, personal, and/or future employment settings.”

Definition

Keyboarding, as used in this publication, refers to the input of data using the touch method on a standard alphanumeric keyboard such as the QWERTY keyboard. The goal of keyboarding instruction is to develop a touch skill that will enable an individual to enter alphanumeric information at a speed that is faster than handwriting.

The touch technique is the striking of the correct keys without looking at the fingers. Automaticity is the desired level of performance. Once the keyboard has been learned, students should use keyboarding in the development of writing skills as part of their language arts instruction or other related activity. Students use word processing—The use of automated equipment and standardized procedures for producing written communications the most in their keyboarding experience.
Importance of Keyboarding

Research, practical experience, and the job market all verify that keyboarding skills are vital. The need for this skill has not diminished in recent years, but what is changing is the way that these skills are obtained and when these skills are acquired.

It has been projected that most individuals currently entering the labor force will use computers. Virginia was one of the states that recognized this and established computer/technology literacy standards during the 1980s for all students enrolled in public schools. (See Appendix A.)

By learning a keyboarding skill, students expand their opportunities for success in all of their classes. Instructors have recognized that students develop work habits in keyboarding that enable them to be more successful in planning and carrying out projects for all of their classes. The online Standards of Learning (SOL) and other tests are more successful if students have touch keyboarding skills.

Current Status

Keyboarding is currently taught in almost every public school system in Virginia. Some school divisions in Virginia have moved all dedicated keyboarding instruction to the middle school level or even to the elementary level. Beginning with the 2013 spring administration of grades 5, 8, and end-of-course Standards of Learning (SOL) writing assessments, Virginia students will complete all direct writing tests online. Instructors have been encouraged to provide opportunities for students at all grade levels to plan, compose, revise, edit, and publish writing using computers. With that in mind, the elementary level instruction is increasing at a rapid pace.

In the Administrative Planning Guide for Business Management and Administration (available at http://www.cteresource.org/apg/categories/business-management-and-administration), keyboarding is identified as a middle school course and Keyboarding Applications is identified as a recommended course for high school credit in middle school. With that in mind, Keyboarding Applications and other courses that include keyboarding instruction may still be offered at the high school level, but many high schools are offering the keyboarding instruction at lower grade levels and reserving the high school course offerings for courses that expand on that keyboarding instruction and application. Popular high school courses that still focus on correct technique and accurate keyboarding skills include Computer Applications; Computer Information Systems; Digital Input Technologies; Word Processing; International Baccalaureate Information Technology in a Global Society; and Design, Multimedia and Web Technologies (available at http://www.cteresource.org/apg/categories/arts-audio-video-technology-and-communications).

The Administrative Planning Guide also addresses the need for keyboarding skills for the courses above the basic keyboarding level with a printed statement that reads as follows: “Recommended prerequisite(s): Keyboarding course(s) or teacher-approved demonstration and documentation of touch keyboarding skills.” The Keyboarding Methodology Instructional Guide for Teachers and Administrators” (http://www.cteresource.org) provides detailed guidelines on page 24 of ways that a school division may implement a waiver or “test out” process that allows students to demonstrate proficiency in the keyboarding competencies before enrolling in higher level Business and Information Technology courses.

If you have questions about keyboarding instruction, please contact Judith Sams, Specialist, Business and Information Technology & Related Clusters, Virginia Department of Education, at Judith.sams@doe.virginia.gov or by phone at 804-371-0196.
Recommended Implementation Models for Keyboarding Instruction
(excerpt from “K–12 Keyboarding: A Position Paper” by the Virginia Department of Education)

A. Grades K–2

- Keyboarding by touch is not recommended for this age group because of small hand size, weaker hand-eye coordination, and shorter attention span.
- For a child to be “ready” to learn to type by touch, his/her maturity level should be at least that of an average third grader. The level of an individual’s concentration is a limiting factor.
- Keyboarding familiarity activities can be conducted to include locating keys, using correct fingers, and learning the position of home keys.

B. Grades 3–8 Implementation Models of Less Than 18 Weeks

- Suggested time frames to meet the minimum of 20 hours of instruction or more
- When offering fewer than 18-week units of instruction, the following chart provides models from which to choose a plan for initial keyboarding instruction.

NOTE: The planning process should include not only the time frame for the unit, but also must include plans for monitoring and reinforcing keyboarding techniques throughout the year and subsequent years.

<table>
<thead>
<tr>
<th>Grade Levels</th>
<th>Minimum Minutes Per Day</th>
<th>Total Weeks</th>
<th>Total Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-4</td>
<td>20</td>
<td>12</td>
<td>20.0</td>
</tr>
<tr>
<td>3-4</td>
<td>25</td>
<td>10</td>
<td>20.8</td>
</tr>
<tr>
<td>4-5</td>
<td>30</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>4-5</td>
<td>30</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>4-5</td>
<td>30</td>
<td>10</td>
<td>25.0</td>
</tr>
<tr>
<td>5-6</td>
<td>35</td>
<td>7</td>
<td>20.4</td>
</tr>
<tr>
<td>5-6</td>
<td>35</td>
<td>9</td>
<td>26.2</td>
</tr>
<tr>
<td>6-8</td>
<td>40</td>
<td>6</td>
<td>20.0</td>
</tr>
<tr>
<td>6-8</td>
<td>40</td>
<td>9</td>
<td>30.0</td>
</tr>
<tr>
<td>6-8</td>
<td>45</td>
<td>6</td>
<td>22.5</td>
</tr>
<tr>
<td>6-8</td>
<td>45</td>
<td>9</td>
<td>33.7</td>
</tr>
</tbody>
</table>

C. Grades 6–8 Implementation Model for 18 Weeks

- As the opportunity for semester courses is available at the junior high/middle school level, school divisions should consider the option of offering the 18-week course, Keyboarding (6150 or 6151). An 18-week course will offer an opportunity for the greatest percentage of students to obtain a sustained skill.

The course should be

- made available to all students for the purpose of developing the skill of keyboarding in a more comprehensive fashion
- taught by an endorsed Business and Information Technology education teacher (Keyboarding in grades 6–12 can be taught by teachers with one of the following business education endorsements: 6000, 6200, 6500, 6600, 6650, 6700, or 6900.)
taught in a fashion that supports language arts writing process goals as well as writing across the curriculum
activities, i.e., keyboarding skill building and follow-up applications to include reports, term papers, class
assignments, and other activities that promote the use of the computer as a communication tool

taught on electronic input devices to allow the integration of word processing and/or computer literacy activities

offered for the duration of a regular class session and scheduled five times per week

considered for the first semester of the secondary level course, Keyboarding Applications (6152).

D. Grades 9-12 Keyboarding

The 36-week course, Keyboarding Applications (6152), and the 18-week courses, Keyboarding 6151 and/or
6153 (formatting), should be available in high school for students who did not have the opportunity to complete
training at earlier grade levels. These courses are also prerequisites to a number of career and technical education
programs in the Business and Information Technology area.

Program Planning for Keyboarding

(6150, 6151, 6152, and 6153)

When planning a program for keyboarding, it is most important to determine when it is appropriate to initiate the
instruction and to plan the scope and sequence of the instruction. Keyboarding instruction should be implemented when
the following elements are available: instructional staff trained in the methodology of teaching a touch keyboarding
system, hardware and age-appropriate software, and an instructional follow-up plan that includes language arts and other
instructional activities for practice, application, and reinforcement.

Units of Keyboarding Instruction

If the elements mentioned above are not in place, a keyboarding program should not be initiated. Research shows that
even though keyboarding instruction has been experimented with as early as kindergarten, a dramatic increase in student
success rates is reported in grades four and above. If a school division is ready to initiate the program in these early
grade levels, school personnel will most likely introduce the skill as a unit of instruction with practice, application, and
reinforcement as a part of the follow-up activities. This introductory unit should be at least 20 hours in length, offered
daily, and divided into time periods appropriate to the age level. The shorter the time period of the offering, the more
important it is for students to follow up the instruction with keyboarding applications to build and sustain their skills.

Keyboarding Courses

School divisions that implement keyboarding at the middle school level should offer the instruction through the
keyboarding courses (codes 6150, 6151, 6152, and 6153) that are approved for grades 6 through 12. The length may
vary depending upon the purpose of the offering. To achieve a touch skill at a minimum level, at least nine weeks of
instruction is recommended. This includes both a system for touch keyboarding and follow-up instructional activities for
reinforcement.
### Differences Between Instruction to Develop a Basic Touch Keying Skill and Keyboarding Courses

*(excerpt from “K-12 Keyboarding: A Position Paper” by the Virginia Department of Education)*

Keyboarding instructional units, dealing primarily with developing a minimal touch keying skill, and instructional goals found in courses such as Keyboarding Application (6152) and Keyboarding (6151), are not the same. The following chart shows some major differences.

<table>
<thead>
<tr>
<th>Keyboarding Instructional Units</th>
<th>Keyboarding Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop touch keying skills without watching fingers, using correct fingering, posture, and hand position.</td>
<td>Gain a high degree of proficiency with the alphabetic keyboard using correct fingering, posture, and hand position.</td>
</tr>
<tr>
<td>Emphasize practice of rapid motions and correct stroking technique with goals of obtaining automaticity and a wpm rate that is faster than a student's handwriting speed.</td>
<td>Emphasize correct techniques and forced speed with accuracy coming later as speed cuts back. Students average 25-30 wpm on a 3-minute timing after an 18-week course.</td>
</tr>
<tr>
<td>Develop the ability to produce simple documents such as friendly letters and stories.</td>
<td>Develop skill in formatting sophisticated documents, including reports, term papers, class assignments, business letters and memos, and other activities that promote the use of the computer as a communication tool.</td>
</tr>
<tr>
<td>Does not introduce numeric row or keypad.</td>
<td>Develop skill with numeric row or keypad.</td>
</tr>
</tbody>
</table>
Course Structure

The keyboarding course 6150 or 6151 (for credit) is taught in a classroom with computers. A workstation with a computer should be available for each student. Students may be taught for a period of 6, 9, 12, or 18 weeks. The 18-week program is the most desirable if students are to learn keyboarding and then work on written communication skills and other applications. The writing process should not begin until students have completed learning all of the alphabet keys. See the section *The Writing Process* for specific steps in the writing process.

The middle school keyboarding teacher will want to work cooperatively with other teachers if the course is offered for more than 9 weeks so that some student work may be related to instruction in other classes.

The program is articulated with experiences on the keyboard that will follow in the middle school and upper grades as students enroll in other Business and Information Technology courses. Continued application of the keyboarding skill is essential for retention of an automaticity (touch technique) level. A reinforcement and follow-up plan should be designed locally to help students sustain keyboarding skills through computer-related activities in the regular educational program. These activities at the elementary and middle school level should come primarily through word processing and language arts activities. Business and Information Technology courses and other Career and Technical Education programs in the middle and high schools provide additional opportunities for such follow-up activities. In such courses, provision should be made to permit students to move ahead as quickly as possible without having to spend unnecessary time repeating skill development where skills already exist. For example, students may test out of the first semester of the Keyboarding Applications course. The competencies and frameworks for all of the available keyboarding courses may be obtained from Verso on the CTE Web site, [http://cteresource.org](http://cteresource.org).

Teaching Personnel

The keyboarding course should be taught by fully certified and endorsed Business and Information Technology instructors or instructors who have the keyboarding add-on endorsement. These instructors have been trained in the methods of teaching the skill. They will apply the principles of skill development and provide appropriate instruction on proper techniques to assure maximum achievement by the student. Keyboarding units, which do not require professional certification or endorsement, may be taught by those who possess touch keyboarding skill and have been trained in touch keyboarding methodology. Such instructors are encouraged to work with business educators as a team or for educational guidance.

If keyboarding instruction is offered using the courses Keyboarding (6150 or 6151) or Keyboarding Applications (6152), a business instructor must have one of the following endorsements: 6000, 6200, 6500, 6650, 6600, 6700, 6900, or the add-on keyboarding endorsement.

Business and Information Technology instructors should be familiar with students of middle school age so that the program is aligned with their unique characteristics. A variety of activities and the opportunity for physical movement by students will contribute to progress in achieving the goals of the program.

A school system may find it necessary to select non-Business/Information Technology instructors with keyboarding skill to teach keyboarding units of instruction. If so, one or more endorsed Business/Information Technology instructors should be trained to provide a workshop for these instructors. The Business/Information Technology instructors should also follow up in the classroom on a periodic basis to assure the most profitable experience for students. While this is not the preferred approach, it results in a better program than one in which the instructor has no preparation in teaching keyboarding.
The following suggestions are made in an attempt to give direction to the most desirable teaching environment for keyboarding. It is recognized, however, that there may be other teaching situations that offer effective keyboarding instruction.

Instructional possibilities, listed in order from greatest to least opportunity for success:

1. **Business and Information Technology instructors.** Since most of these instructors are already trained in the psychomotor and psychological principles of keyboarding, their expertise should be used. School divisions may find that a middle or high school Business/Information Technology education instructor's schedule may be adjusted to allow him or her to teach keyboarding units on a regular basis. Another solution may be to have a Business/Information Technology instructor dedicated to grades 3–8 keyboarding, and may include travel to more than one school.

2. **Team teaching (Business and Information Technology instructor /non–Business and Information Technology instructor).** In this situation, a Business/Information Technology instructor initiates the teaching of keyboarding but trains the non-business instructor to conduct follow-up activities, including technique checkups.

3. **Non-Business and Information Technology instructors with training (already possess a touch keyboarding skill).** Instructors who possess the touch keyboarding skill may be trained in the basic methodologies of teaching keyboarding. Materials are available that support this type of training in a one-day workshop.

4. **Non-Business and Information Technology instructors with training (do NOT possess a keyboarding skill).** Instructors who do not possess a touch keyboarding skill should be given instruction in obtaining touch keyboarding as well as the methods of teaching keyboarding. Time frames for this type of training need to be tested, but current information indicates that 10-12 hours are necessary for adults to obtain a minimal keyboarding skill.

**Overview of Competencies Needed by a Keyboarding Instructor**

The development of keyboarding skills is a cumulative process. New skills must be introduced in a consistent sequence that builds upon previously learned skills. Crews, North, and Erthal (2006) describe three stages of learning that a keyboarding student experiences. These three stages include: Cognitive Phase (Key Introduction), Associative Stimulus Phase (Kinesthetic Memory Traces), and Autonomous Muscle Response Phase (Automaticity).

Mastering keyboarding involves more than just learning the locations of keys. The foundation for masterful keyboarding is technique. Technique involves the positioning and action of the body and fingers as the student is keyboarding. Ergonomics is an important aspect of keyboarding that students need to learn from the beginning of their keyboarding instruction. Learning key location involves a sequential process beginning with letters followed by punctuation, numbers, and symbols. Mastery develops through practice. (Zeitz)
Essential Instructor Competencies in Keyboarding Learning
(excerpt from “K–12 Keyboarding: A Position Paper” by the Virginia Department of Education)

Keyboarding instructors must

▶ provide instruction that allows students to develop touch keyboard fingering techniques required for rapid, accurate entry of data, and for future improvement in skill
▶ strive for student achievement of minimum levels of skill required to encourage future use and maintain skill over time
▶ possess operational skill of the fingering and keyboard manipulation techniques to
  ▶ model for instructional leadership
  ▶ analyze learner behavior for remediation
  ▶ design appropriate practice
  ▶ sequence learning experiences
  ▶ select learning materials
  ▶ evaluate programs
▶ know the principles of psychological learning—stimulus-response and cognitive theories that are the basis of all keyboarding lesson designs
▶ possess the ability to guide students in the procedures for
  ▶ developing effective stroking and manipulation techniques through modeling, demonstrating rhythms, fingering patterns, and hand-arm alignments
  ▶ response reinforcement—providing maximum amount of immediate performance feedback
    • practice sequencing
  ▶ developing maximum response speed in keyboard stroking and manipulation through
    • pacing techniques for forcing rate of response and for developing response chaining
    • massing and distributing practice for maximum gain effect
    • establishing individual, intermediate response rate goals
    • selecting appropriate copy
  ▶ developing response accuracy in keyboard stroking and manipulation through
    • response (stroke) differentiation
    • speed response to copy difficulty
    • focusing concentration on a specific technique
  ▶ entering numeric data from top row and keypad
  ▶ developing document (simple to sophisticated) formatting skills
▶ integrate and sequence technique, speed, and accuracy goals
  schedule keyboard technique, speed, and accuracy reinforcement activities after achieving intensive initial stroking goals
▶ integrate keyboarding with other academic activities to reinforce keyboarding skills
▶ measure and evaluate keyboarding skills.
Basic Principles of Keyboarding Instruction

The psychological principles of learning and skill building are important in teaching keyboarding. Because keyboarding is a psychomotor skill, proper instruction from the very beginning assures that students develop correct skills. Instructional materials provide an accepted sequence and method of keyboarding instruction and practice and are appropriate for the maturity level of the student.

All keyboarding instructors should be familiar with the following basic principles.

1. **Materials used for keyboarding presentation and practice should be normal prose in word and sentence format.**

   Students will progress more rapidly if they use words and sentences in their beginning practice materials. The skill used at the beginning should be based on what students will be expected to do after acquiring the skill. Evaluation of student progress is recommended. Assignment of a grade is optional.

   Curriculum materials should be reviewed to be sure that this approach is used. There are a number of software packages that feature the extensive use of nonsense (fffrf…) material. These do not contribute significantly to the building of keyboarding skill. However, word processing software may be the primary software instructional tool if it is used with printed instructional materials. It should provide a blank screen for instruction, text-editing features, screen formatting capabilities, and printing procedures appropriate for the grade level.

2. **The keyboard is presented in an order that allows for early keying of words and sentences.**

   Keys can be introduced so that students will use words on the first day of instruction. While nonsense material may be used to learn reaches and to learn the feel of keying a new key, the use of each key in words and sentences is important at the beginning.

3. **Introducing the home row first, followed by the “skip around” method to introduce other keys, is the best way to teach keyboarding.**

   Effective instructional materials will introduce keys using different fingers in each lesson. The text will not introduce at one time all of the keys typed by one finger.

   Keyboarding materials for adults introduce more keys in each lesson, because it has been found that adults can learn keyboarding more rapidly than children.

4. **At least 20 lessons should be used to present the keyboard.**

   Keyboard introduction includes all of the letters, numbers, and symbols. Students at the middle school level have short attention spans. Lessons will typically last from 30 to 35 minutes. Students should not be introduced to so much material that they cannot remember the keys. This will inhibit the learning of the touch method.

   Keyboarding materials for adults introduce more keys in each lesson, because it has been found that adults can learn keyboarding more rapidly than children.

5. **Students should not be kept from looking at their hands when initially learning a new key.**

   Students must be able to see, reach for, and touch the key when learning it. While looking at the key may be all right while learning to strike the key, it should be discouraged after the initial stage. Students should visually locate the key being introduced. The instructor should be sure that each student is using the correct finger. The next step is for the instructor to demonstrate the key stroking. The introduction will include the instructor dictating the keystroke as students watch their hands. This will be followed by dictating the home row key and then the key which is to be learned (assuming at this point that home row has been taught). With this assurance, the instructor will have the students strike the home row key, the new key, and the home row key with a space following to be sure they learn the feel of the reach. The students will check their screen or copy to be sure that they are striking the correct keys. Materials from the student text related to this new key can be used by the instructor for individual and dedicated practice.

6. **Vocalization increases the intensity of the stimulus, leads to better stroking and quicker responses, focuses the students’ attention on keying, and contributes to more effective learning.**

   When the keys are first introduced, it is recommended that the instructor call (dictate) the keys in the practice material in a crisp and paced manner so that students will learn to strike the key with a staccato touch. The instructor can set the pace in the initial learning stage by dictating the initial practice material letter by letter. This will also force quick stroking and a development of a pattern for stroking similar to the skilled individual.
It should be noted that kinesthetic feedback develops slowly; therefore, outside reinforcement by the instructor is necessary during the early stages of motor skill development. The student should develop the feel of the reaches. Early errors and awkward key stroking techniques should be ignored. Everyone makes mistakes when first learning a new skill. However, this should not be confused with such incorrect techniques as “flying” elbows or poor positioning of hands.

7. **Research has shown that a speed approach to keyboarding is superior to an accuracy approach.**

   Let the student learn the correct movement first and get the feel of keying data. Do not be overly concerned about errors as long as the student is in control. Slow the student down if the error rate is very high.

   After the student has learned correct keying techniques, then accuracy can be emphasized. If accuracy is emphasized at the start, students will use a “stop-and-look” approach rather than a fluent approach that promotes an automatic response to the keyboard.

8. **Speed and accuracy should be developed separately.**

   Students cannot develop speed and accuracy at the same time. Force the students to develop speed. The student must get the feel of keying at a faster speed, and the fingers should have a snappy movement. After this type of practice, the instructor should have students reduce the keying speed to a comfortable level (control rate) at which errors are reduced. Do not try to develop speed and accuracy in the same lesson.

   However, when conducting speed development exercises, the instructor may sometimes deliberately slow students to achieve control.

9. **Pacing or speed forcing is desirable for developing speed, improving keying motions, and decreasing students’ dependence on sight.**

   Speed is developed through short bursts of speed—usually 30 seconds to 2 minutes. Pacing can be used with marked materials that give the number of words at intervals, e.g., every four words. This will allow the student to set a goal for each 15 seconds. The instructor, using a stop watch, can call the 15-second intervals, at which time the student will know whether to key faster or slower to achieve the desired goal.

10. **Accuracy consists of keying at the correct speed.**

    Once students have been forced to a new level of speed, the instructor should help them work for control and accuracy. If the student continues to make errors, the instructor should set a speed. Then, using marked copy, the student should determine where in the copy to be at each 15-second call from the instructor. If the student is ahead of the word mark, then keying should be slowed.

    The procedure for gaining control will be similar to that of speed building, except the goal will be to key at a slower rate with greater control. Remember that even experts make about two errors per minute.

11. **All keying tasks should be based on goals that are appropriate for each student.**

    Students will progress at different speeds. After being introduced to the entire keyboard, students will need help in setting their personal goals. It is not appropriate for students to try to key at speeds beyond their ability.

    A minimum goal for keyboarding skill is automaticity with approximately 20 wpm from provided copy.

12. **Modeling is an effective strategy for presenting proper keying techniques and key reaches.**

    Students must see how a skill is to be executed. The instructor should use a keyboard that is located in a place so that students may see the correct response.

    Modeling is an effective technique. Individuals who coach others use this technique all the time—demonstrating what is correct and how to do something.

13. **Students should always know the goals of the lesson or practice.**

    The instructor will explain the procedure for each new item being introduced and taught. In addition, the student is told what should be accomplished as a result of the activity.

14. **In order for practice to help the student, it must be a directed activity with a specific goal.**

    Students must be given directed practice if it is to be helpful. This is a basic principle used in any kind of coaching activity. Unless this is done, there will be little or no progress.
15. Observe students closely in the beginning stages to be sure they are using proper technique and learning the keyboard.

If a student has not learned the location of keys in the beginning lessons, it is important that the instructor not continue to introduce new keys and techniques. Remedial work with computer software may allow the student to review the beginning keys and those not learned before proceeding. The student will be more successful in learning to key if this is done.

**Teaching Techniques**

It is essential to give attention to learning keyboarding techniques. They will enable the students to improve as the instruction progresses. It is important to note that good textbooks and software have pictures and ideas to demonstrate the following techniques.

**Hand and Arm Position**
The keyboard should be located on a desk that allows the student to have arms from shoulder to elbows in a vertical position. The forearm should reach up at a slight angle with hands over the keyboard. Fingers are pointed down from the hand as they are held in a curved position over the home keys. The hands should not be allowed to rest on the keyboard or desk—the palms of the hands should be held up in a position that is at the same angle as the forearms. Correct positioning allows for correct reaches in learning the keyboard.

**Posture, Legs, and Feet**
The chair should allow the student to sit up straight with feet flat on the floor. One foot is placed slightly in front of the other for balance. Provision should be made for adaptations of the furniture and chair so that the student may sit comfortably. Balance is necessary for good key stroking techniques.

**Stroking**
The student should be taught to strike the key as if it were hot. Lingering on a key may cause it to repeat on some keyboards. A keystroke is a staccato movement. As the student keys faster, it may appear that the fingers do not remain on the home row. Arms and hands should not move around when striking keys. They are described as being “quiet.”

**Space Bar**
When learning the use of the space bar, students should be asked to try tapping it separately with each thumb to determine which is the most comfortable. The student should be taught to strike the space bar correctly with the thumb that is chosen. A quick strike and release of the space bar is critical so that extra space will not appear in the copy. Teach the technique of spacing after each word as a part of the word. Students should operate the space bar by touch.

**Shifting**
The use of the shift key with the little finger should be taught as a three-phase operation of 1) shift, 2) type, and 3) release. Learning to shift in this sequence will assure that all letters to be capitalized are in upper case. Students must be taught to use the shift key on the opposite side of the keyboard from the key that is being capitalized. Drills should be given to ensure that the operation of the shift key becomes automatic. This keying technique is by touch. Do not allow students to press “shift lock.” It will break their concentration and fluency, cause them to look at their hands, and add an extra stroke in the operation.

**Return or Enter Key**
The student should be taught to reach quickly for the return or enter key with the little finger on the right hand and then quickly return the finger to the semicolon key. This must be an automatic response.

**Tab Key**
Teach the student to reach quickly to the tab key with the little finger on the left hand and then return quickly to the “a” key. Students will need to practice to make this reach easily and to automatize the reach. This is an important key for students as they begin to write material that is organized into indented paragraphs.
**Technique Reinforcement**

Business and Information Technology instructors have found that repetition is important in technique reinforcement. Instructors may use the following review before keyboarding activities:

- Sit up straight.
- Move your keyboard flush with the edge of the desk.
- Curve your fingers over the home row.
- Hold your wrists up and even (not resting on the equipment).
- Keep your eyes on the copy.
- Keep your feet flat on the floor.

This may quickly go to abbreviated reminders as follows:

- Sit straight
- Keyboard forward
- Fingers curved
- Wrist up
- Eyes on copy
- Feet flat

**Letter Introduction**

The steps in teaching a new key are enumerated below. Because keyboarding is a psychomotor skill, the more senses involved in the learning process, the more effective the learning.

1. Students locate the key on their keyboard by looking.
2. Instructor asks them to hold up and point to or call out the name of the finger to be used.
3. Instructor demonstrates the key stroking technique to be used.
4. Instructor dictates the new letter and directs students to strike the key only as it is called.
5. Instructor dictates the letter, and the students strike the key as they watch their finger make the reach and return to home row keys.
6. Instructor dictates the letter again, and students strike the key as they watch their finger make the reach and return to home row keys.
7. Instructor directs students to look toward the front of the room and dictates the letter again. Students strike the key without looking either at their finger or the computer.
8. Instructor has the student check the copy to confirm the accuracy of the response made without looking.
9. Instructor dictates a tryout line as students follow the copy in the textbook and type each letter, combination, or word on cue. Follow the above steps each time a new key is taught.
Strategies for Building Speed
Reading/keying responses patterns

In all keyboarding, there seems to be a basic rhythm. Some words are typed slower (at a letter level of response) than this basic rhythm; some words are typed faster (word level of response). The following examples indicate normal key-stroking patterns for different kinds of copy.

▶ **One-hand words**: You set up my tax case only after you saw my card.
   ▷ The words in the above sentence, even though short, are typed letter by letter and sound metronomic.

▶ **Balanced-hand words**: She did lend a hand when they did the work for me.
   ▷ The above words are easier and are typed with so little time between strokes that they are heard as word responses.

▶ **Balanced-and one-hand words**: If you do go into the city, get the six tax forms.
   ▷ A mixture of balanced-hand and one-hand words requires a combination of the first two response patterns.

**Follow these procedures for building speed:**

1. Dictate and type the first word in a line of short balanced-hand words to students. Have them watch and listen. Be sure to point out that the space bar stroke is made as a part of the word. (Students should not pause before they hit the space bar). Have students say and type the word in the same way. Continue this procedure throughout the line of practice.

2. Next, have students say and type the line with you as you set the pace at a comfortable rate. Remind students not to let their hands bounce (“quiet” hands and arms) as they quicken their pace.

3. Repeat the steps 1 and 2 when keying two-and three-word phrases. Dictate the words as phrases—not as individual words.

4. Repeat at a slightly slower pace.

5. Repeat at an in-between rate.

6. Administer a half-minute timed writing on each of the lines of practice, watching for proper space bar timing and finger action.

7. Have students compare their rates on balanced-hand words with their rates when keying phrases or combinations of balanced-hand words and phrases.

The procedures should be repeated periodically. Use of exercises increasing speed and complexity will encourage variable rhythm and will help students adjust to the various kinds of key-stroking patterns.

In using this type of practice, encourage students to read and think the word and to give careful attention to the sequence of letters within the word. Explain that as one finger is completing its reach stroke, another finger should be prepared and on its way to the next key. Demonstrate and have students practice the variable response patterns often. Be sure students hear the differences in the sounds of each response pattern. If they do, rhythm develops rapidly and their keying speed increases.

**Skill-comparison writings—sentences and paragraphs**
Skill-comparison writings are consecutive timed writings on two or more similar selections of different difficulty. Examples of copy follow:

▶ **Balanced-hand**: Did the bugle corps toot with the usual vigor for the queen?

▶ **Combination**: We may also work on the stage sets when the case is through.

▶ **Third row**: Speed is sure to result if you keep keying at a steady rate.

▶ **Adjacent keys**: Cass tried various copiers to find one that suits her needs.

▶ **One-hand**: As oil reserves get scarce, we draw upon a vast pool at sea.

▶ **Direct reaches**: My group collected a large sum for her musical concert fund.
Administer skill-comparison writings as follows:

1. Give a 1-minute speed writing on a fairly easy line of practice. Have students compute their gross words a minute.

2. Give a 1-minute speed writing on each of several lines of practice that are more difficult than the one previously used.

3. Have students compare their gross words a minute on each of the lines of practice.

4. Administer a series of 1-minute timed writings. Have each student first retype the sentence with the lowest gross words a minute. In the second minute, have students type their next slowest, and so on, until all sentences have been retyped for one minute each.

5. Repeat steps one and two and measure any skill growth that may have occurred.

To do skill-comparison paragraphs, follow the same procedures listed above, using short paragraphs instead of sentences.

The importance of the comparison of scores lies in its effects on students. They analyze both the copy and their practice behavior and then direct their practice efforts toward overcoming the challenges found in the progressively more difficult copy. Skill-comparison keying allows for individual goal setting. Each student competes with personal past performances.

Guided-Paragraph Writing

In developing keyboarding skill, students must learn to control the pace of keying at specific speeds—15, 18, 20, 22, and so on. As soon as they know they can control their hands and fingers at a specified speed, they are ready to push a higher goal. Guided (paced)-paragraph writing is designed to help students in reaching for the next higher level of speed.

Below is an example of a guided-paragraph writing with markings for 1-minute, 2-minute, and 3-minute timings.

(Copied with permission from Century 21 Computer Applications & Keyboarding. South-Western Thomson Learning, 2002, p. 66.)

1. Administer a 1-minute timed writing on a paragraph. Help students compute their gross words a minute (gwam) to establish a base rate.

2. Have each student add four gross words a minute to his/her base rate to determine a goal for the next writing.
3. Have students choose a quarter-minute checkpoint using a table such as the one provided above.

4. Have students note the word-count dots and numbers above the lines in the paragraph at each quarter-minute checkpoint for their goal rate.

5. Demonstrate the sound of the various rates students have selected.

6. Administer two or more 1-minute writings on the paragraph with each student trying to reach each checkpoint exactly as you call each quarter minute.

7. Offer suggestions for improvement between timed writings.

Goal-Keying Paragraphs
This strategy is intended to be used beginning with the sixth to eighth week of instruction.

1. Administer a 1-minute timed writing on a paragraph. Have students determine gross words a minute. This will be their base rate for the exercise.

2. Have each student add three or four gross words a minute to their base rate to determine a goal for the next writing.

3. Administer two or three 1-minute timed writings during which students try to reach or exceed their goal rates. If they reach the goal rate, they can set a new one and push for that. In pushing for speed, students should not think about accuracy.

4. Administer a 1-minute timed writing in which students drop back two or three words below their highest rate on the previous timed writings. Their accuracy should improve on this timed writing.

When using goal-keying activities, a student should not be permitted to type always in the 15 to 20 gross words a minute speed range in order to maintain a high degree of accuracy. Also, a student should not be permitted to push for speed continuously with an error rate of 5 to 10 errors a minute. The first student will never reach potential speed with acceptable control; the second student will never reach potential control with acceptable speed. The concept of “push for speed/drop back for control” grew out of research related to guided-writing and goal-keying procedures. These procedures are excellent for helping students push for speed until they discover their error threshold (the speed at which their error rate increases drastically) and then drop back slightly in rate (two or four gross words a minute) to regain acceptable control.

Sustained Speed-writing
Because speed built in 30-second and 1-minute intervals does not transfer completely to longer writings, students need to learn to cope with the progressively lower rates they will type on 2-, 3-, and 5-minute writings. Practice in pushing for speed for longer periods of time will help students sustain higher rates. This strategy should probably be used after the 9-week instruction program and after students have developed a good rate of speed (25–30 gross words a minute).

Time will probably allow the instructor to use only two or three of the strategies.

When to Emphasize Accuracy
So far, all our emphasis has been on proper technique and speed building. This is because students with proper technique and reasonable speed usually develop accuracy with little effort. The major exceptions are students with reading disorders. An early emphasis on accuracy is a negative approach to keyboarding instruction and will delay student learning.

It is important to know how to determine the rate of speed the students are keying to help them improve their keyboarding skills. On the next page is a chart to help measure the words per minute the students are keying on a timed writing.
**Technique for Determining Words Per Minute**

Count every five keystrokes (words, numbers, spaces, and symbols/punctuation marks) on the computer as one word.

For speeds less than one minute, multiply by the fraction of the minute:

```
Rick got the dog at a mall in town.
4     8     12    16    20    24    27
```

15" Timing (1/4 of a minute)

```
Rick got the dog at a mall in town.
1     2     3     4     5     6     7
```

1’ Timing

For speeds more than one minute, divide by the fraction of the minute:

```
Rick got the dog at a mall in town.
.5    1    1.5   2    2.5   3    3.5
```

2’ Timing

For quick 12” timings, count up all keystrokes (letters, numbers, symbols, spaces) on the computer. That will equal the equivalent of words per minute. (Five strokes equal one word and 12” equals 1/5 of a minute).

```
Rick got the dog at a mall in town.
35 words per minute for 12” timing
```
Teaching Strategies and Activities

Classroom Activities

Variety in classroom activities is needed to keep students motivated and interested. The inclusion of writing in the middle school offers many opportunities for instructors.

1. Always be prepared for each day’s instruction. A number of distracting things can happen in the computer and network environment. The instructor will be in a better position to keep the class moving along if proper preparation is done EACH day.

2. Break up lessons into small parts, and vary the activities. The attention span of the middle school child requires a variety of activities. Look for opportunities for the students to move around during the class period.

   Develop each activity so that maximum progress can be made. Students will have a procedure at the beginning of the period which will get them on the computer and into the warm-up activity. New techniques, new material, review of things learned and practiced, and skill building are then pursued as appropriate.

3. Include the development of personal skills essential for being effective learners in any class. These include teaching students to listen to and follow instructions.

4. Teach students to make judgments as they work on their assignments. They should do this in the context of the objectives of the lesson. The prepared instructor keeps students on target with the objectives for the day.

5. Give students the opportunity to share items they have written with fellow students. The use of the group technique to share and critique each other’s work is suggested. Students should be encouraged to work on items that are classified as “share items.”

6. Recognize students for their accomplishments. Display work on the bulletin board, or find other ways to give recognition to students.

7. The keyboarding classroom should always be neat and orderly. Operational procedures require that students work in and recognize the value of being neat, orderly, and organized.

8. Instructors should know thoroughly the software being used in the class. This advance preparation will be helpful in dealing with unforeseen problems. Software documentation usually does not cover all of the software malfunctions and problems that will be encountered.

9. At the beginning, use a software package that provides an open screen for work. This can be part of a tutorial program or a simple word processing package. This software should be preloaded, or students in the first period class can be taught the procedure for loading software if a network is not used. Preloading assures the maximum time on the task for learning keyboarding.

10. Each student should have a storage device on which work is saved.

11. If printers are not available for each computer, students can print on a rotation basis so that not all students are printing their work. This will save paper, avoid confusion, and add to the efficiency of the class operation.

12. Cue cards may be used in helping students to automatize simple words. The instructor may develop a series of cards that help vary instruction during the early stages of learning the keyboard and the beginning of speed development. Noted keyboarding authorities suggest this activity be used only in the early stages.

13. During skill building, instructors should point out to students the varying rhythm of keying information. Words that are keyed with one hand have an entirely different rhythm from words that are made up of letters that alternate from one side of the keyboard to the other. Some materials will have a combination of one-hand and balance-hand words. Some words can be chained, or keyed automatically (the) while others, because of their letter combinations are keyed on a letter by letter basis (pizza).
14. Guided writings are an effective way to force speed or slow students down for accuracy. Most instructional material will provide paragraphs or sentences that have words marked in four or five word intervals. This will allow the student to set a goal for 1- or 2-minute timings during which the instructor will call the time every 15 seconds. Short timings should be used in developing skills. Five-minute timed writings and longer writings do not develop skill. During the skill building, longer amounts of time can be used such as 2-, 3-, or 5-minute writings to help the students see the result of longer writings and to begin helping them sustain their speed for a longer period of time.

Writing Activities
Instructors who include writing activities have suggested that a textbook focusing on writing can be used. Some of the activities that might be included in lessons are the following:

- Lists of topics for writing
- Types of writing—prose and poetry
- Selection of the context for the topic
- Use of narration
- Leads, similes, colorful words, punctuation, word problems, organization of ideas, focus on theme, and refinement of details
- Writing procedures such as drafts, revisions, and topic selection
The Writing Process

Prewriting Activities
These are activities that focus on the identification of a topic that will be explored. This is the first step in the writing process. Once the topic has been identified, the student gives consideration to all of the ideas to be included about the topic. The questions of who, what, why, when, how, and where must be answered. A variety of activities can be included in the prewriting stage such as brainstorming, free writing, and improvisation. This helps to identify such ideas as the setting, situations, characters to be involved, special circumstances, and emotions to be conveyed. In addition, the student must decide the style of writing that will best convey these ideas.

Writing the First Draft
Now that the student has a topic and a decision on whether to proceed in writing prose, poetry, or a play, the writing process continues. Putting down the ideas and beginning to format them into a setting is the most difficult part of the process. The goal is to put the ideas into settings and situations that create interest. At this point, the focus is “getting it down.” Form and correct style are not important at this stage—capturing all of the ideas is the key. Because a computer is used, the preparation of numerous drafts and updates is not a problem. Students must realize that this is just the first attempt to capture mental images and ideas in writing. With the use of the computer, students can adjust, change, add, and delete from the first draft.

Editing The Draft
Refining what has been written, identifying improvements and changes, and organizing and reorganizing one’s thinking are activities in the process of editing. Consider the ways in which the material can be made more interesting, how to make the situations come to life, and how to convey one’s thinking and inner feelings. Use groups in order for students to share and critique each others’ writing. Encourage students to work together to identify ideas and improve the written work. The writing process should not be rushed.

Preparing A Final Product
When this stage is reached, the student should carefully check to be sure that grammar, spelling, punctuation, and writing technique are correct. The piece of writing should be in the best form possible. The instructor may also encourage group collaboration at this point.

Selecting Illustrations
The student should now consider what can be done to make the writing come alive. What illustrations, pictures, or other graphics can be inserted or attached that will give further meaning to the piece of writing? The student should be encouraged to use creative abilities to illustrate the points in the writing. This is another way for the student to enhance his/her thinking skills.

Writing Journal
Instructors of keyboarding who incorporate the writing approach have found the use of a journal to record writing activities to be helpful. After the keyboard has been introduced and the touch method has been taught, the writing process begins. At that point, the student should be given some time each day to work on writing at the keyboard. A log or journal of each day’s activities is recommended. In this way, the instructor may set a requirement that a certain amount of writing be done.

In the beginning, the journal may be handwritten. Students should be given samples of journals. After students have become more proficient, the journal should be kept on the computer.
I. Prewriting Ideas

To plan your writing, you could do one or more of the following:

Focus
What is your specific purpose? Who is your audience?

Imagine
What would you tell someone about your topic?

Brainstorm
List lots of ideas. Decide which ones you will use.

Draw
Draw a picture or diagram of your topic.

Web
Draw lines between ideas to connect them.

II. Drafting Ideas

During your writing, think about the following:

Organization
Are your ideas in a logical order?

Clarity
Have you said what you want to say? Will your audience understand what you are saying?

Development
Do you need to add more details? Do you need to take some out?

III. Revising and Editing

To review your writing, think about the following:

Transitions
Are your transitions appropriate to link sentences and paragraphs?

Punctuation, Grammar, Spelling, Capitalization
Have you made sure your writing is free of errors?

Sentences
Have you varied your sentence patterns?
Materials on Writing

At all levels, but especially in upper elementary grades and at the middle school level, the keyboarding course should include instruction on writing and composition at the keyboard. Many demands are made on instructors at those levels to complete a full curriculum. Thus, some keyboarding time away from the traditional language arts program can improve instructional efficiency as well as student writing skills.

Support Materials

The instructional materials and strategies should support the effective development of writing skills. The writing process may direct students to a number of materials that will give them different types of creative writing that has been prepared by middle school students. Publications that exhibit students’ work should be made available.

Keyboarding instructors should secure or prepare materials to support and facilitate the program. The following should be considered:

Charts, Transparencies, Bulletin Boards, and Interactive Whiteboards

Check with publishers for materials that emphasize proper procedures and techniques in the classroom. Suggested items include:

- a keyboarding chart transparency or a presentation screen
- posters with illustrations of correct posture (These may be in the form of posters, transparencies, or other illustrations of arms, hands, feet, and back.)
- posters with illustrations of correct techniques and procedures including the following: stroking, keeping magnets or food away from computer, and organizing work area
- displayed list of start-up and shut-down procedures
- exhibits organized so that student work can be featured
- student progress chart showing accomplishments (This could be competencies achieved, lessons completed, or keyboarding speed, for example.)
- wall charts showing various models of reports or focusing on other keyboarding topics
- Smart Board to enhance instruction and learning.

Transparency Masters and Instructor Demonstration Software

Instructor’s guides for keyboarding texts and software packages should be reviewed to identify transparency masters, presentation software, and other helpful teaching tools that may be available.

Flash Cards

In the early stages of moving from letter response to chained response on the keyboard, the instructor may use flash cards with common words that should be typed at the chained response level. (The term chained response refers to the ability of the typist to key two or more letters automatically. For example, the word the is often typed at the chained response level by experienced typists.)

Grading

Grading methods vary from one school to another, depending on the philosophy of instruction at the level where keyboarding is taught. Students should be given goals to work toward, and they should be evaluated based on their progress in meeting these goals.

During the beginning stages, developing proper techniques is critical. Most instructor manuals for keyboarding include technique checklists. The instructor should continually emphasize correct stroking techniques during the early stages. The use of the technique activities described on pages 11–13 will assist the instructor and student to focus on techniques on a regular basis. The purpose of these timings is to make the student aware of the technique and to see that it is an activity in which everyone can be successful.
Speed and then accuracy will be developed in the course. The goal is to develop a minimum skill of 20 to 30 words a minute. Most students will be able to do more than this if the instructor uses the "coaching model" for working with students and regularly monitors and provides feedback while students are working at the keyboard. Timed writing for speed and accuracy can be graded. The instructor and student should be aware that this speed is much different from the speed when preparing an assignment or writing on the computer. Copying material word for word does not reflect the way that the skill will be ultimately used. Standards will vary according to grade level and the length of the keyboarding program.

Grades can also be based on the writing activities in the class. Consider the amount of writing done by the student, the presentation of the written material, and the types of writing projects attempted by the student. Writing can be coordinated with other instructors in the middle school so that output for other classes becomes the focus of some of the writing activities.

An examination of the grading structures in selected schools in Virginia at the middle school level reflects a very traditional approach that mirrors what is done at the secondary level. This section has not been specific because it is hoped that instructors will take advantage of the opportunities for coordinating instruction with other instructors in the middle school program. The introductory statement to this guide also pointed out that the program should complement the language arts program.
**Technique Guide Sheet**

<table>
<thead>
<tr>
<th>Correct Body Position</th>
<th>Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fingers curved and upright lightly on the home keys</td>
<td></td>
</tr>
<tr>
<td>2. Body centered in front of the keyboard (center of body directly in front of the “B” key)</td>
<td></td>
</tr>
<tr>
<td>3. Forearms nearly parallel with the slant of the keyboard</td>
<td></td>
</tr>
<tr>
<td>4. Elbows hanging naturally near the sides of the body</td>
<td></td>
</tr>
<tr>
<td>5. Eyes focused on textbook</td>
<td></td>
</tr>
<tr>
<td>6. Feet on the floor, slightly apart</td>
<td></td>
</tr>
</tbody>
</table>

**Correct Keystroking**

<table>
<thead>
<tr>
<th></th>
<th>Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Curved fingers</td>
<td></td>
</tr>
<tr>
<td>2. Upright fingers (not leaning over onto the little fingers)</td>
<td></td>
</tr>
<tr>
<td>3. Quick, snappy keystrokes (fingertip snaps toward the palm)</td>
<td></td>
</tr>
<tr>
<td>4. Low, relaxed wrists</td>
<td></td>
</tr>
<tr>
<td>5. Still hands (almost motionless—fingers do the reaching)</td>
<td></td>
</tr>
</tbody>
</table>

**Correct Spacing Technique**

<table>
<thead>
<tr>
<th></th>
<th>Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of the right thumb</td>
<td></td>
</tr>
<tr>
<td>2. Strike of the space bar with a short, low, down–and–in motion of the thumb</td>
<td></td>
</tr>
</tbody>
</table>

**Correct Shift–Key Technique**

<table>
<thead>
<tr>
<th></th>
<th>Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of the appropriate little finger (other fingers, especially the index fingers, stay on home keys)</td>
<td></td>
</tr>
<tr>
<td>2. Use of a 3–step procedure: (1) shift, (2) strike key, (3) release both</td>
<td></td>
</tr>
</tbody>
</table>

**Correct Return Operation**

<table>
<thead>
<tr>
<th></th>
<th>Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of the little finger of the right hand (other fingers stay on home row keys)</td>
<td></td>
</tr>
<tr>
<td>2. A quick reach from home key to ENTER key and back to home key</td>
<td></td>
</tr>
<tr>
<td>3. No pause before or after ENTER motion</td>
<td></td>
</tr>
<tr>
<td>4. Eyes kept on screen (or textbook) copy as the ENTER is made</td>
<td></td>
</tr>
</tbody>
</table>

* Place a check mark in the block in the first column (for the first evaluation) opposite the technique items that need improvement. Use the second and subsequent columns for later evaluations.
Keyboarding Test Guidelines

For Use in Determining Students’ Success in Meeting the Keyboarding Prerequisite

Keyboarding is a prerequisite for many courses in Business and Information Technology. However, it may be possible for many students to waive the keyboarding prerequisite if there is a successful program at the middle school or earlier level. This program would allow students to acquire a system of keying on a keyboard using the QWERTY method of type by touch and without looking at their hands to enter alpha and numeric data. Demonstration of mastery of the essential competencies listed for the Keyboarding (Middle School), 6150–9 weeks, are a MINIMUM for this waiver of the keyboarding prerequisite to be acceptable and for students to be able to enter higher-level courses at the high school and perform successfully. In most instances, a minimum of 18 weeks of keyboarding instruction by an instructor trained in keyboarding methodology will be needed, not only to obtain the keyboarding skill, but also to maintain that skill.

There are a variety of ways that a school division may implement a waiver or “test out” process:

- Business and Information Technology instructors (middle and high school instructors collaborate) may develop a performance test that allows students to demonstrate proficiency in the competencies mentioned above. If this method is used, the test should be given just prior to students entering a higher-level Business and Information course.

- The performance test may combine competencies to be tested. A major requirement will be observation of the student entering data to determine if a student has a touch method of keying. This is the most essential skill needed.

- It is not necessary to test for advanced formatting skills that will be developed in subsequent courses.

- A keyboarding “test” may be used by students in middle school courses where they learn keyboarding skills or by students who claim to possess keyboarding skills learned in other educational settings.

- Course competencies and student competency records may be obtained from VERSO on the CTE Web site, [http://cteresource.org](http://cteresource.org).

- The competencies tested should be documented using the student competency records mentioned in the above item and should be filed with the students’ records.

- If students take the 36-week Digital Input Technologies course and successfully meet the essential competencies, they will have met the keyboarding prerequisite.

- If students take approved keyboarding courses and successfully meet the essential course requirements, they will have met the keyboarding prerequisite. Again, students must meet the essential competencies in the 9-week, 6150 Keyboarding course at a minimum. The 6-week option in middle school is only listed for schools that offer rotating career information wheels. The 6-week course rarely provides the opportunity for students to obtain and retain a touch skill of keyboarding.

- High school instructors and administrators must be included in the process to determine what is acceptable for a waiver of the keyboarding prerequisite.

For questions, contact the Business and Information Technology & Related Clusters specialist at the Virginia Department of Education, 804–371–0196.
Keyboarding Instructional Materials

Delivery Options

Before selecting instructional materials for keyboarding, the following delivery options should be considered:

**Option 1.** Use electronic input devices and word processing software with a keyboarding textbook and instructor direction. (Most success in Virginia has been reported from schools using this option.)

**Option 2.** In addition to Option 1, use keyboarding software for supplementary and remedial instruction. This software must have a mini word processor.

**Option 3.** Use keyboarding software with directed teaching from the instructor. Instructor guidance is the key to success for this option.

When reviewing materials to use in the instructional program, there are several factors to consider. The items listed here can be used on a check sheet for reviewing materials:

- The reading level is appropriate for the students in the class.
- The lessons introduce the keyboard with whole words and sentences in the beginning lessons. Nonsense material is kept to a minimum in the keyboard introduction.
- After the introduction of the home keys, the lessons usually introduce two keys in a lesson. Each lesson will have an appropriate amount of practice material—usually about 20 to 25 minutes of practice, depending upon the age and grade level of students.
- Twenty or more lessons are used to introduce the keyboard. After the home row is taught, the keys are introduced in a “skip around” method rather than all of the keys typed by one finger.
- Lessons provide appropriate material for review of what has been learned in previous lessons.
- The instructional materials allow an approach that emphasizes, in this order, technique, speed, and accuracy.
- There are schematics, keyboard charts, and drawings that illustrate fingering at the keyboard, proper techniques for reaches at the keyboard, and posture.
- Materials for skill building are appropriately marked for calculating speed and accuracy.
- Materials are easy for students to read—it is easy to understand illustrations, directions, and material to be copied.
- Review and reinforcement lessons are presented frequently.
- The instructional materials make provision for the student to set goals and to measure progress on a regular basis.
Selection of Software and Networks for Keyboarding

Software and networks are important to the instructor who uses computers to teach keyboarding. Basic considerations are presented in this section for each of these topics. Preparation and review are important elements as one prepares to handle instruction using computer software and a network.

An instructor must understand that even with careful preparation, computers and networks will not always operate smoothly. An instructor can help students become confident in their experience by working out any difficulty that may arise without exhibiting frustration or anxiety. With a systematic, organized approach to solving problems, the instructor will model a real-life way of working with new technology.

Software Selection

Keyboarding software may be used to complement the instructor’s teaching in the beginning stages. Keyboarding software that includes a mini word processor may also be a primary instructional tool; however, it should reflect sound methods of teaching and be used in an instructor-directed fashion. Self-teaching packages, or packages that emphasize game techniques, are not recommended for instruction of touch techniques. Keyboarding instructors report that the software can enhance teaching. (See the discussion on delivery options, pages 11–13.)

Many software packages have written instructional material that accompany them. Proper documentation of the software is also important so that the instructor can get set up and begin using the software.

The instructor should ask the following when considering keyboarding software:

► Can the software be loaded into more than one machine or is the user limited to one machine at a time?
► Does the software introduction of keys and initial exercises conform to psychological principles of learning and correspond to textbooks?
► Is the software affordable?
► Does the software check errors according to the rules of keyboarding authorities, or does it do a literal space-by-space check of the material which requires keyed data to be in the exact location as the model?
► Does the software provide an open screen, a “scratchpad,” mini word processor, or some similar way of entering data onto the screen?
► Does the software contain graphics or videos that demonstrate correct posture, fingering, and techniques?
► Are the supporting print materials of such a nature that they will be durable? Can they be used without any special apparatus to hold the materials?
► Does the software allow students to progress at their own speed and set their own goals?
► Does the software provide a system for checking and recording electronically the progress of the student? Can this be printed by the instructor? Are there controls that prevent the student from making any changes on their progress documentation?
► Does the software provide immediate feedback to students as they learn the keyboard?
► Is it possible to prevent error correction by using the delete key or type-over feature in the early stages of keyboard instruction; is it possible to turn word wrap on and off; and does the software offer the capability of using 40 or 80 columns on the screen?
► Can students easily exit and enter a lesson at any point without having to start over again?
► Does the software use different types of activities to vary the presentation on the computer?
► Is the documentation adequate for the instructor to start up the program and manage the record keeping system?
Does the software have a management system that allows the instructor to set variable achievement requirements for each student?

Does the software emphasize key stroking speed early without undue attention to accuracy?

Answers of “yes” to the foregoing questions indicate a positive evaluation of the product.

A rating form which can be used for evaluating keyboarding software appears in Appendix C.

Networks

Keyboarding can be taught in a classroom that has a computer network. Basic information about local area networks is included in this section.

Local Area Network

A local area network (LAN) is a hardware and software system that makes it possible to link electronic input devices.

Network technology has many advantages. It simplifies the handling of software, which can be loaded on the “server” for the LAN. The system also has controls that enable the operator of the LAN to limit the access of each individual station to selected items on the server. The system allows the electronic input device operator to have access by a unique user code to an individual storage area and to access the software that is needed in the student’s instructional program. The LAN administrator or instructor can have access to information entered into the LAN by each student.

The LAN also simplifies the use of peripherals such as printers. With the use of laser printers, the number of devices can be reduced without interfering with the instruction in the classroom. Items to be printed can be “spooled” to the appropriate printer. Spooling is sending data to the printer to be stored until printed in the order received. The LAN also makes it easy to transmit data between workstations.

Advantages of Using a Network

The long-range cost factor is one of the primary reasons for considering a network. It may allow for the most efficient use of software and peripherals. It has advantages in the classroom of providing control of activities for individual workstations and reducing software handling.

In the work place, networks improve communication and the handling of data. Electronic mail systems can be used in organizations having computer networks. The ability to introduce students to the network environment and the use of electronic communications is an advantage. There is often increased efficiency as a result of the network in the classroom and in the work environment. Students spend more time on task rather than on operational setup and ending activities. Network systems can also have enhancements for the instructor that include grade book, attendance, and test generation options.

The controls on the network may also allow for better management in the classroom. The types of software and information accessed through the network can be identified by different colors on the screen so that the instructor can be immediately aware if the student is not on task.
Appendix A

Computer/Technology Standards of Learning
(Grades K–12)

Grades K-2

Basic Operations and Concepts
C/T K-2.1 The student will demonstrate knowledge of the nature and operation of technology systems.
- Identify the computer as a machine that helps people at school, work, and play.
- Use technology to demonstrate the ability to perform a variety of tasks; among them turning on and off a computer, starting and closing programs, saving work, creating folders, using pull-down menus, closing windows, dragging objects, and responding to commands.

C/T K-2.2 The student will demonstrate proficiency in the use of technology.
- Demonstrate the use of mouse, keyboard, printer, multimedia devices, and earphones.
- Use multimedia resources such as interactive books and software with graphical interfaces.

Social and Ethical Issues
C/T K-2.3 The student will practice responsible use of technology systems, information, and software.
- Know the school's rules for using computers.
- Understand the importance of protecting personal information or passwords.
- Understand the basic principles of the ownership of ideas.

C/T K-2.4 The student will use technology responsibly.
- Demonstrate respect for the rights of others while using computers.
- Understand the responsible use of equipment and resources.

Technology Research Tools
C/T K-2.5 The student will use technology to locate, evaluate, and collect information from a variety of sources.
- Identify information in various formats.
- Identify available sources of information.

Problem-solving and Decision-making Tools
C/T K-2.6 The student will use technology resources for solving problems and making informed decisions.
- Recognize that technology can be used to solve problems and make informed decisions.
- Identify and select technologies to address problems.

Technology Communication Tools
C/T K-2.7 The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- Identify the best tool to communicate information.
- Use technology tools for individual writing, communication, and publishing activities.
- Demonstrate the ability to create, save, retrieve, and print document.
Grades 3-5

Basic Operations and Concepts
C/T 3-5.1 The student will demonstrate knowledge of the nature and operation of technology systems.
- Discuss common uses of computers in their daily life and the advantages and disadvantages those uses provide.
- Communicate about basic technology components with appropriate terminology.

C/T 3-5.2 The student will demonstrate proficiency in the use of technology.
- Use skills and procedures needed to operate various technologies such as scanners, digital cameras and hand-held computers.
- Identify basic software applications such as word processing, databases, and spreadsheets.

Social and Ethical Issues
C/T 3-5.3 The student will demonstrate knowledge of ethical, cultural, and societal issues related to technology.
- Identify how technology has changed society in areas such as communications, transportation, and the economy.
- Discuss ethical behaviors when using information and technology.

C/T 3-5.4 The student will practice responsible use of technology systems, information, and software.
- Understand the need for the school division's acceptable use policy.
- Discuss the rationale of fair use and copyright regulations.
- Follow rules for personal safety when using the Internet.

C/T 3-5.5 The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity.
- Work collaboratively when using technology.
- Practice and communicate respect for people, equipment, and resources.
- Understand how technology expands opportunities for learning.

Technology Research Tools
C/T 3-5.6 The student will use technology to locate, evaluate, and collect information from a variety of sources.
- Collect information from a variety of sources.
- Evaluate the accuracy of electronic information sources.
- Enter data into databases and spreadsheets.

Problem-solving and Decision-making Tools
C/T 3-5.7 The student will use technology resources for solving problems and making informed decisions.
- Determine when technology tools are appropriate to solve a problem and make a decision.
- Select resources to solve problems and make informed decisions.

Technology Communication Tools
C/T 3-5.8 The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
- Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.
- Use technology tools for individual and collaborative writing, communication, and publishing activities.
- Use telecommunication tools to communicate and share information with others.
Grades 6-8

Basic Operations and Concepts
C/T 6-8.1 The student will demonstrate knowledge of the nature and operation of technology systems.
• Describe how technology impacts learning.
• Explore how software and hardware are developed to respond to the changing needs of technology.
• Describe compatibility issues, between various types of technology.

C/T 6-8.2 The student will demonstrate proficiency in the use of technology.
• Understand that hardware and software have different operating systems that may affect their use.
• Use self-help features such as online tutorials and manuals to learn to use hardware and software.

Social and Ethical Issues
C/T 6-8.3 The student will demonstrate knowledge of ethical, cultural, and societal issues related to technology.
• Demonstrate knowledge of current changes in information technologies.
• Explain the need for laws and policies to govern technology.
• Explore career opportunities in technology related careers.

C/T 6-8.4 The student will practice responsible use of technology systems, information, and software.
• Demonstrate the correct use of fair use and copyright regulations.
• Demonstrate compliance with the school division's Acceptable Use Policy and other legal guidelines.

C/T 6-8.5 The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity.
• Work collaboratively and/or independently when using technology.
• Practice preventative maintenance of equipment, resources, and facilities.
• Explore the potential of the Internet as a means of personal learning and the respectful exchange of ideas and products.

Technology Research Tools
C/T 6-8.6 The student will use technology to locate, evaluate, and collect information from a variety of sources.
• Use databases and spreadsheets to evaluate information.
• Use technology resources such as calculators and data collection probes for gathering information.
• Use Internet and other electronic resources to locate information in real time.

C/T 6-8.7 The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
• Use search strategies to retrieve information.
• Evaluate the accuracy, relevance, and appropriateness of electronic information sources.

Problem-solving and Decision-making Tools
C/T 6-8.8 The student will use technology resources for solving problems and making informed decisions.
• Employ technology in the development of strategies for solving problems.
• Use a variety of technologies to identify and provide possible solutions to real-world problems.
• Use content-specific tools, software, and simulations such as environmental probes, graphic calculators, exploratory environments, and web tools.
• Participate in collaborative problem-solving activities.
• Select and use appropriate tools and technology resources to accomplish a variety of tasks.

Technology Communication Tools
C/T 6-8.9 The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
• Choose the appropriate tool, format, and style to communicate information.
• Independently use technology tools to create and communicate for individual and/or collaborative projects.
• Produce documents demonstrating the ability to edit, reformat, and integrate various software tools.
Grades 9-12

Basic Operations and Concepts
C/T 9-12.1 The student will demonstrate knowledge of the nature and operation of technology systems.
• Discuss the inherent advantages and limitations of technology.
• Define the relationship between infrastructure, electronic resources, and connectivity.
• Identify and describe the impact of new and emerging technologies and their applications.

C/T 9-12.2 The student will demonstrate proficiency in the use of technology.
• Identify and resolve hardware and software compatibility issues.
• Develop and communicate strategies for solving routine hardware and software problems.

Social and Ethical Issues
C/T 9-12.3 The student will demonstrate knowledge of ethical, cultural, and societal issues related to technology.
• Assess the potential of information and technology to address personal and workplace needs.
• Demonstrate knowledge of electronic crimes such as viruses, pirating, and computer hacking.
• Explore and participate in online communities, and online learning opportunities.
• Identify the role that technology will play in future career opportunities.

C/T 9-12.4 The student will practice responsible use of technology systems, information, and software.
• Adhere to fair use and copyright guidelines.
• Adhere to the school division’s Acceptable Use Policy as well as other state and federal laws.
• Model respect for intellectual property.

C/T 9-12.5 The student will demonstrate knowledge of technologies that support collaboration, personal pursuits, and productivity.
• Respectfully collaborate with peers, experts, and others to contribute to an electronic community of learning.
• Model responsible use and respect for equipment, resources, and facilities.

Technology Research Tools
C/T 9-12.6 The student will use technology to locate, evaluate, and collect information from a variety of sources.
• Integrate databases, spreadsheets, charts, and tables to create reports.
• Use available technological tools to expand and enhance understanding of ideas and concepts.

C/T 9-12.7 The student will evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
• Analyze and draw conclusions about the comprehensiveness and bias of electronic information sources.
• Design and implement a variety of search strategies to retrieve electronic information.

Problem-solving and Decision-making Tools
C/T 9-12.8 The student will use technology resources for solving problems and making informed decisions.
• Investigate and apply expert systems, intelligent agents, and simulations in real-world situations.
• Select and apply technology tools for information analysis, problem-solving, and decision-making.
• Use technology resources such as educational software, simulations, and models for problem-solving, and independent learning.
• Produce and disseminate information through collaborative problem-solving activities.

Technology Communication Tools
C/T 9-12.9 The student will use a variety of media and formats to communicate information and ideas effectively to multiple audiences.
• Determine the most effective tool, format, and style to communicate to specific audiences.
• Use technology-based options, including distance and distributed education, to collaborate, research, publish, and communicate.
• Practice self-directed use of advanced technology tools for communicating with specific audiences.
Appendix B

Research and Related Literature about Keyboarding Instruction

Research Findings

- Computer-based communication is an important part of our daily communication and efficient keyboarding skills enable individuals to prosper in this environment. (Zeitz, 2008)

- Speed and accuracy are built upon well-developed technique, which should be taught at the beginning and then developed through on-going reinforcement. (Crews, North, and Erthal, 2006)

- Becoming confident and competent at using these computer skills builds self-esteem. It also aids organization and work study skills, as the computer permits verbal and linear information to be displayed in graphic mode which is suitable for those students with non-verbal and visual-spatial learning strengths. (Sladden, 2004)

- Learning how to type properly is critical for several reasons. While most kids and adults can learn to hunt and peck on their own, real typing speed depends on proper technique. And speed is important because youngsters should learn how to think and compose at the keyboard. (Himowitz, 2003)

- Mastering keyboarding involves learning technique (physical positioning and movement), ergonomics (safe and comfortable keyboard interaction), and key location. (Zeitz, 2008)

- At their core, typing programs rely on standard teaching techniques that have been developed during the past hundred years, taking you from beginner to advanced levels with a series of drills and timed typing tests. What makes the difference is how they analyze and track your progress. (Himowitz, 2003)

- Software programs are becoming popular to assist elementary classroom teachers in teaching keyboarding. While software programs have many advantages, the main disadvantage is confirming that children are actually using correct techniques as they complete each lesson. Observation is essential by a knowledgeable instructor in requiring children to use the touch method of inputting. (Rogers, Laehn, Lang, O’Leary, and Sommers 2003)

- Keyboarding skills are no longer vocational in nature, but necessary to communicate, extract, and disseminate information. (Erthal, 2003)

- School districts are realizing the importance of keyboarding skills for elementary children. Learning an efficient inputting skill is as basic as learning handwriting in today’s technology-driven world. (Rogers, Laehn, Lang, O’Leary, and Sommers 2003)

- Studies indicate a dramatic increase in language arts skills as a result of children inputting words and sentences frequently using a computer. Keyboarding and language arts are a dynamic duo. Keyboarding should be integrated with language arts and other subject areas, such as social studies and science. Word processing of projects in academic subjects is easier when children possess a usable keyboarding skill. (Rogers, Laehn, Lang, O’Leary, and Sommers 2003)

- A series of international studies found that “up to 60% of the students across the globe reported eye strain, neck and shoulder pain, wrist and back discomfort, headaches, and fatigue. (Hajic, 2008)

- With the proliferation of information technology throughout both working and personal worlds, the need for keyboarding skills is growing. About 77 million people use a computer at work (55% of total employment). (Bureau of Labor Statistics of the U.S. Department of Labor, 2003)

- In any instruction we need to take into account the individual differences of our students. We cannot use techniques that assume that all students need the same kind of instructional methodology, will respond at the same rate, or will need the same practice focus. (McLean, Chadd, and Maxam, 2011)

- With most of the focus being on age or grade levels, Fleming recommended finger size, manual dexterity, coordination, fine motor skills, and attention span all be considered when deciding when keyboarding instruction should be provided to elementary school students. (2002)
The National Business Education Association's performance expectations for grades kindergarten through 6 include developing proper input techniques. (2007)

Visual access is needed during the early stages of skill development. When students first learn to key, they need to watch their fingers make the reach to a new key and then the reach to the next key, which may not entail a return to the home row. (Erthal, Roane, and Larsh, 2003)

If keyboarding software is going to be used, teachers must evaluate software packages in terms of sound psychomotor skill development, motivational issues, ease of use, interest level, and instructional and technical characteristics. (Maxam, 2002)

Carpal tunnel syndrome (CTS) is frequently a health concern for people who use a computer keyboard or mouse. The risk of developing CTS is less for those who use proper furniture or equipment, keyboarding techniques, posture, and/or muscle-stretching exercises than for those who do not. (Hoggatt and Shank, 2006)

Keyboarding is the penmanship of the computer age. (Johnson, Nelson, and Townsend, 2002)

Students should rest their eyes by looking away from the screen and blinking rapidly while focusing on distant objects approximately every 15 minutes to reduce eye strain. (Barrero and Hedge, 2000)

It is a fair assumption that computers of the future will be more powerful and less expensive. It is also a fair assumption that almost every type of job will somehow involve a computer. With long-distance connectivity, more people will work full-time or part-time from home. (Wells and Ambrose, 2007)
Appendix C

Keyboarding Software Evaluation Form

Keyboarding Software Evaluation

Name of Software: ________________________________

Suggestions for Using This Evaluation Instrument

► Use the ratings only as a guide in reviewing software.
► Give emphasis to those rating points which are of highest priority for your desired outcomes.
► Use the ratings to compare alternative software.
► Do not expect all high ratings for the software you adopt.
► Do not try to quantify these ratings—they obviously do not all have the same value.
► Answer the software questions, below, first. Then complete the software ratings that begin on the next page.

Software Questions

1. How much time does it take to complete a lesson?
2. How much time does it take to complete the entire software package?
3. Is the software a keyboarding game, or is it a program for psychomotor training?
4. What is the expected word-per-minute goal?
5. How often are timed writings included in the program?
6. How is the user made knowledgeable of the timed test results—immediately with visual prompt or on a separate screen?
7. Can a user intentionally or unintentionally skip exercises?
8. How are the goals set for timed writings—by the program, the instructor, or the user?
9. Can the student use the correction key?
10. What is the format of the practice material?
11. How many keys are introduced in each lesson?
12. Is a manual included with the software package?
13. Does the manual suggest weekly hours to be spent on the exercises?
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<tbody>
<tr>
<td>1.</td>
<td>The software provides adequate instruction.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>2.</td>
<td>The touch method is reinforced.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>3.</td>
<td>The program is designed for individualized instruction.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>4.</td>
<td>Software includes effective activities to introduce numeric keys.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>5.</td>
<td>Software includes sufficient instructions for deciding margins and proper spacing.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>6.</td>
<td>Exercises are included to reinforce proofreading of keyed copy.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>7.</td>
<td>Sufficient operating instructions are given in the program or supporting documentation.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>8.</td>
<td>Software reinforces proper keyboarding posture.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>9.</td>
<td>Software reinforces correct fingering while keyboarding.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>10.</td>
<td>Software has easily understood exiting procedures.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>11.</td>
<td>The instructor can identify the progress of the student.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>12.</td>
<td>Previous lessons are reinforced.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>13.</td>
<td>Error messages are evident and easily understood.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>14.</td>
<td>Appropriate spacing rules are followed.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>15.</td>
<td>After introduction of new keys, there is reinforcement of correct finger placement.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>16.</td>
<td>When new keys are introduced, there is sufficient instruction for proper fingering.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>17.</td>
<td>Students can practice a lesson until a goal is met.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>18.</td>
<td>Software package has effective motivational tools.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>19.</td>
<td>Software has flexibility to alter the program for individual needs, (i.e., alter speeds or defaults).</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>20.</td>
<td>Use of correction key or keys is reinforced.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>21.</td>
<td>Errors are accounted for in student’s work.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>22.</td>
<td>Directions in manual are easy to follow.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>23.</td>
<td>Practice exercises emphasize punctuation.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>24.</td>
<td>Cost of the software is reasonable.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>25.</td>
<td>Graphics are appropriate.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
</tr>
<tr>
<td>26.</td>
<td>Instructor’s grading and recording component is included.</td>
<td>SA</td>
<td>A</td>
<td>U</td>
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</table>
Appendix D

Keyboarding Activities/Resources

Activities
There are many types of activities that you can incorporate into the teaching of keyboarding. These activities help to review what the students have been taught and to practice the skills in a creative way.

Baseball
This activity is for speed development. The class is divided into two teams and each team selects a name. Students are timed for 1 minute on a selected line or sentence. They are to key the line as many times as they can during the timing. Each line is equal to one base; four bases (lines) equal a run. Scoring: Each team counts the number of lines each team member completes during the timing and records the runs on the board. For example: if a team gets 10 total bases (lines), it scores two runs and has a runner on second for the start of the next inning. The number of innings is based on the amount of time available.

Football
Create a simple illustration of a football field on the board or a piece of poster paper. The class is divided into two groups. Each group keys in a certain line for a 30-second time period. At the end of that time, one person from each team counts the total number of words typed for his/her entire group. The difference in number of words typed between the two groups is the amount of yardage the leading team advances. There are penalties: five-yard penalty for any improper technique, including wrong fingering, looking at the keyboard, or hunting and pecking; ten yards for illegal use of the voice (talking during the game).

Continuous Story
Working in small groups, each student keys in the same beginning sentence at his/her keyboard. For instance, “Once upon a time.” Then they continue to create a story for approximately 3–5 minutes. At that time, the instructor says, “switch,” and the students go to the next computer and continue the story on that computer. Keep doing this until each student gets through his/her group. Let students know that some stories may be selected to be read out loud.

Simon Says
The instructor acts as Simon calling out things for the students to do. Students should not complete the action unless the instructor first says, Simon says. If students do not follow directions, they must stop. Try the following examples, but remember to add a few non–Simon directions also.

1. Simon says to key Line 1 on page 22.
2. Simon says to return and begin typing on Line 2.
3. Simon says to look at your neighbor while you type.
4. Simon says to sing while you type.
5. Simon says to shake your head while you type.
6. Simon says to say the ABCs while you type.

Technique Tag
The purpose of technique tag is to work on proper technique at the keyboard. One person is selected to walk around the room looking for someone with excellent technique. When the person finds someone with great technique, he/she tags or taps that person and the tagged person becomes the new person to search for another person with great technique.
Tortoise and the Hare

The class is divided into two equal teams, the Hares and the Tortoises. The Hares’ goal is to type for speed and the Tortoises’ goal is to type for accuracy. Scoring goes as follows and can be adjusted to reflect skill levels of individual classes:

**Hares**
1. 5 yards for 15 wpm gain
2. 3 yards for 12 wpm gain
3. 1 yard for 10 wpm gain

**Tortoises**
1. 5 yards for no errors
2. 3 yards for 1 error
3. 1 yard for 2 or more errors

The 10 animals who earn the greatest distance are the winners. Switch the students’ roles so they work at both, building speed and accuracy.

**Poems and Mad Libs**

*Poems Original/Copy*
Discuss various types of poetry. Read examples. Then let students either create their own or copy an example, using their keyboarding skills.

**Mad Libs**

Give students Mad Libs to copy and fill in. Go over the parts of speech they will need as they type the information in.

**Recipes**

Each student brings in a copy of a favorite recipe. Create a class cookbook. As an extension, students can switch or add at least one ingredient to the recipe.

**Letters**

- Each student types a letter to a distant grandparent, friend, relative, sports figure, heroine, or politician.
- Each student types a letter to the editor of a school or local newspaper.
- Each student types a thank you letter to a recent guest or benefactor at his/her school.

**Movie, Music, and Art Reviews**

Students become professional critics. They type a critique of one or more of the following:

- a contemporary song
- a movie they just saw
- musical pieces played for them by the teacher (Mix it up: classical, hard rock, folk)
- three art pieces on the wall

The critique should include a short description, an opinion, and a recommendation.
Resources

There are also many keyboarding activities and resources offered electronically. Here are a few sources to aid teachers in teaching keyboarding.

http://ctereresource.org—has keyboarding frameworks, course competencies, and student competency records

http://www.kusd.edu/departments/instructional_technology/keyboarding/resources.html—has various online keyboarding resources from Kenosha Unified School District No. 1

http://www.davis.k12.ut.us/district/etc/cathy/keyboarding.html—has online typing Web sites, classroom applications, and reference materials from Educational Technology Training Resources

http://Teachers.net—provides 36 keyboarding lesson plans for students of all ages. The lesson plans range from beginner to advanced.

http://www.learnkeyboardtyping.com/—offers step-by-step instruction to help students increase keyboarding skills. This four-lesson tutorial provides demos, tips on finger placement, and a practice area.

http://lessonplans.btskinner.com/keybrd.html—features lesson plans and activities, keyboarding educational links, and typing tutors for students of all ages from Tayna Skinner’s Business Education Lesson Plans

http://www.testmytyping.com/typing-tutor.php—offers a fun and easy typing tutorial for improving typing speed. The tutorial features 10 lessons which can be used by beginner and advanced typists.

http://www.uen.org/Lessonplan/LPview.cgi?core=1214—offers keyboarding lesson plans designed for grades 6-9. The lesson plans can be used to improve accuracy, speed, and finger placement by the Utah Education Network.
Appendix E

Presentation

Download presentation.
Workshop Objectives

- To obtain methods and techniques for teaching keyboarding
- To learn how to demonstrate the introduction of new letters

Workshop Objectives, continued

- To identify strategies for building touch typing speed
- Provide ways to measure and evaluate keyboarding skills
What is keyboarding?

Method used to enter data into the computer

What is the Touch Method?

- The ability to operate a keyboard efficiency and accurately without looking at the keys
  - Muscle memory is used instead of sight.
  - Sometimes referred to as touch typing.
Care of the Computer

- Never spray the computer screen with glass cleaner or use disinfecting wipes.
- Canned air is an excellent way of cleaning keyboards.
- Keep all liquids and food away from your computer.

Care of the Computer, continued

- Use disinfecting wipes to clean tabletops and keyboards, regularly.
- Clean pencil marks, magic marker, etc. from tabletops.
Computer Parts

A: Monitor/Screen
B: Keyboard
C: CD/DVD drive
D: CPU
E: Mouse
F: Mouse Pad

Computer Terms, a few default

line spacing, hard drive, orientation, input,
file, memory, operating system, bold,
word wrap, italics, margins, graphics,
underline, typeover, hardware,
peripheral,
Correct Keyboarding Posture

- Sit up straight
- Feet flat on floor
- Wrists low, but not touching keyboard
- Fingers curved and upright over home keys
- Forearms parallel to slant of keyboard
- Eyes on copy/book
Feet

Incorrect Posture
Correct Posture

Correct Posture Alignment
Computer Safety

- Repetitive Strain Injury (RSI)
  Occurs when routine, repetitious movements occur without adequate intervals of rest or breaks. Also known as Repetitive Stress Injury.
  - Carpal Tunnel
    Most common – increased pressure on the median nerve at the wrist

Home Row Keys
Teaching Methods

- Demonstration (Modeling)
- Observing/Confirming/Correcting
- Pacing/Feedback

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Must Dos for Teachers

- Always be prepared for each day’s instruction. “Bell to Bell”

- Break lessons into smaller parts, and vary the activities. “Practice, practice, practice is most effective when sessions are brief, but frequent.”

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Must Dos for Teachers, continued

- Recognize students for their accomplishments. “Display work on the bulletin board, around the classroom – give tickets or incentives for good work.”

- Keyboarding lab should always be neat and orderly. “Always have students clean their workstation.”


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Basic Word Processing Skills

- Create New document
- Open Existing document
- Save/Save As
- Print
- Change Font Style/Size/Color
- Cut/Copy/Paste
- Zoom
- Text Effects (bold/underline…)
- Changing Margins
- Tabs
- Indents
- Page Breaks
- Insert Clip Art
- Spell Check
- Tables
- Headers and Footers
Additional Keyboarding Tools and Activities

Tic Tac Toe with Letters

A  b  D
m  P  s
L  T  r
### Tic Tac Toe with Categories

<table>
<thead>
<tr>
<th>Desserts</th>
<th>Animals</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colors</td>
<td>School Supplies</td>
<td>Clothes</td>
</tr>
<tr>
<td>Numbers</td>
<td>Cities</td>
<td>Flowers</td>
</tr>
</tbody>
</table>

### Grading

- Stress technique over speed and accuracy – *(Elementary Students)*
- Speed should not be stressed until all the keys and proper techniques have been learned
- Fast keyboarding develops with regular computer use and much practice, practice, practice
- Set goals for students and base evaluation on the progress meeting the goals

Source: *Keyboarding Methodology: Instructional Guide for Teachers and Administrators*  
Virginia Department of Education, Office of Career and Technical Education, 2005

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Additional Keyboarding Topics

- Proofreader’s Marks
- Proofing and Editing
- Spelling and Word Usage
- Capitalization
- Number Expression
- Sentence Structure
- Punctuation

Additional Keyboarding Activities

- Listening Exercises
- Reading Exercises
- Numeric Keypad Operation
- Composing at the Keyboard
- Word Games
Appendix F

Works Cited


A Statement by the Policies Commission for Business and Economic Education

THIS WE BELIEVE ABOUT KEYBOARDING

The dramatic increase in the use of computers affects our personal and professional lives. The keyboard is and will continue to be the most widely used input device in communicating with computers. Whether an executive uses a keyboard as a means of communication of a student interacts with a computer for drill and practice, the skill of keyboarding shortens input time and increases productivity.

Keyboarding is defined as the act of placing information into various types of equipment through the use of a typewriter-like keyboard. Typewriting and keyboarding are NOT synonymous. The focus of a keyboarding course is on input rather than output.

Students
WE BELIEVE THAT KEYBOARDING SHOULD BE REQUIRED OF ALL STUDENTS.
With the rapid expansion of computer usage, primarily microcomputers, educational institutions should require that all students develop keyboarding skills. Keyboarding skills will allow students to interface more efficiently with microcomputers in educational, personal, and/or future employment settings. The keyboard, as used on typewriters, word processors, microcomputers, and computer terminals, serves as the primary device for inputting information (words, numbers, and symbols) into electronic information processing systems (word processors, computers, or integrated systems). Students should develop keyboarding skills just prior to the time they will apply the skill. Therefore, it is critical that keyboarding instruction be provided over a wide range of grade levels.

Curriculum
WE BELIEVE THAT KEYBOARDING CURRICULUM SHOULD BE DEVELOPED TO REFLECT APPROPRIATE INSTRUCTIONAL OBJECTIVES AND CONTENT.
Instructional material should provide ample practice on alphabetic and numeric characters, symbols, and control and function keys. Copy should be similar to the material which students will input after developing their keyboarding skill.

WE BELIEVE THAT AFTER SUCCESSFULLY COMPLETING 25 TO 45 HOURS OF INSTRUCTION IN KEYBOARDING, STUDENTS SHOULD BE ABLE TO:

- Demonstrate the correct “touch” method for operating alphanumeric keys
- Demonstrate the correct “touch” method for operating a ten-key numerical pad
- Demonstrate a straight-copy speed of 25 to 45 words per minute (2.5 to 4 lines per minute) in 1-and 2-minute timed input exercises. Errors should be unacceptable since electronic corrections are part of the “touch” method on an electronic keyboard. (This objective assumes that keyboarding will be taught on an electronic keyboard and the speed expectations are dependant upon the grade level and the number of hours of instruction).
- Demonstrate the ability to work from straight-copy and rough-draft material
• Demonstrate the ability to proofread both alphabetic and numeric data
• Demonstrate the ability to follow oral and written directions
• Demonstrate the ability to compose at the keyboard

Levels of Instruction
Elementary schools should focus on the development of the “touch” method of inputting on an
electronic keyboard. This can be accomplished by combining the business educator’s
competence in keyboarding and knowledge of psychomotor skill development with the
elementary teacher’s knowledge of the learning patterns of this age student.

Middle/junior high schools should focus on the development of the “touch” method with the
addition of formatting skills. An introduction to business applications will provide a realistic
reinforcement of the need for a personal and occupational skill of keyboarding. This course can
also serve as a guidance function as an introduction to the business education program at the
secondary level.

Secondary schools should require keyboarding skills for graduation. For students entering high
school who have not acquired these skills, a keyboarding course should be provided. The same
objectives from the elementary and middle/junior high school courses would apply even greater
emphasis given to personal and business applications.

Postsecondary institutions, including colleges and universities, and continuing education
programs should utilize the secondary level objectives with instructional material appropriate for
postsecondary school students. Instructional material should be relevant to the area of
concentration of each student.

WE BELIEVE THAT BUSINESS EDUCATORS SHOULD PROMOTE AND ASSIST IN
THE TEACHING OF KEYBOARDING AT ALL LEVELS OF INSTRUCTION.

WE BELIEVE THAT BUSINESS EDUCATORS SHOULD EQUIP THEIR
KEYBOARDING CLASSROOMS WITH MICROCOMPUTERS.

Business Education Teachers
Business education teachers have the responsibility of:
• Promoting keyboarding courses in their institutions
• Communicating to students, teachers, counselors, administrators, parents, legislators, and
  businesspersons the need for this course
• Developing curriculum consistent with the identified objectives
• Providing instruction for this course
• Working cooperatively with elementary teachers to provide keyboarding instruction at
  the elementary school level

Business Education Teachers
Business education teachers have the responsibility of:
• Providing preservice and in-service instruction for teaching keyboarding
• Assisting in development of curriculum
Assisting in evaluation of hardware and software appropriate for keyboarding instruction
Providing keyboarding instruction to all students at their institutions

**Business Education Supervisors**

Business education supervisors at state and local levels have the responsibility of focusing upon the broad issues associated with keyboarding by:

- Recommending and approving the acquisition of microcomputers
- Assisting in development of curriculums
- Expanding certification to include keyboarding instruction at the elementary school level
- Promoting keyboarding to administrators
- Providing in-service for teachers

**WE BELIEVE THAT ALL BUSINESS EDUCATORS SHOULD WORK TO INSURE BUSINESS EDUCATION’S ROLE IN KEYBOARDING INSTRUCTION.**

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