

# CompuKeys'

## Managed Keyboarding

### For Today's Students in Tomorrow's World

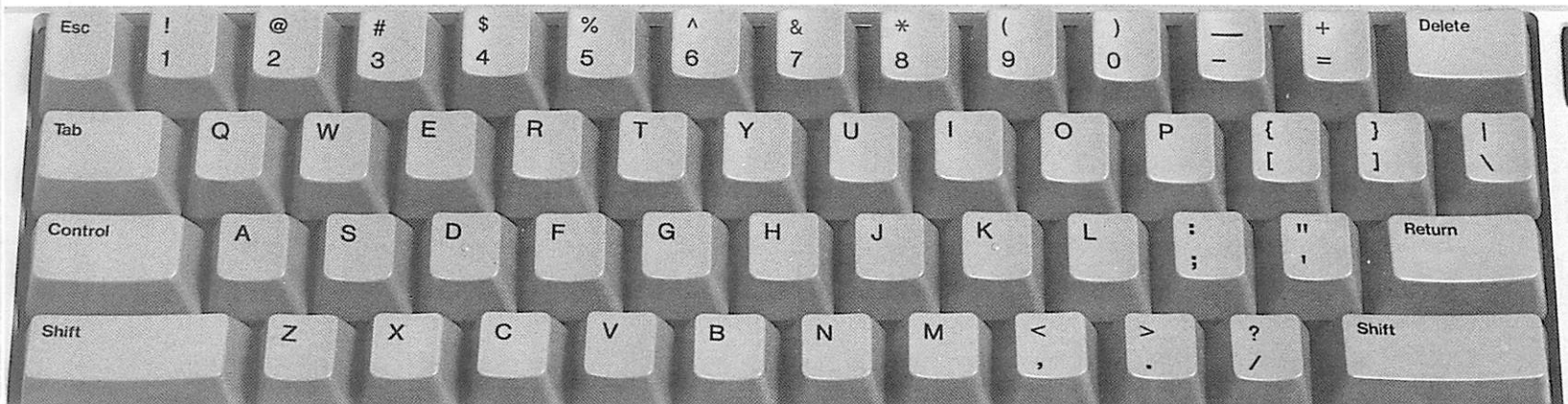
Introducing the most comprehensive, research-based,  
keyboard-learning courseware ever produced.

DEVELOPERS:  
Dr. Gary N. McLean, Professor, Business Education, University of Minnesota, a nationally recognized keyboarding authority  
Ronald R. Geiser, experienced educational programmer and designer with emphasis on tutorials and management and authoring systems  
Timothy F. Cimbur, experienced educational programmer and designer with emphasis on graphics and sound  
David C. Lindgren, M.A., licensed secondary business education teacher with extensive typewriting and microcomputer teaching experience  
Joyce M. Lindgren, M.A., licensed elementary school teacher and Coordinator of Instructional Computing for a large, educational computing consortium  
Jerome A. Farm, B.S. Aerospace Engineering, experienced education and scientific programmer with emphasis on software optimization

**CompuKeys, Inc.**  
P.O. Box 8142  
St. Paul, MN 55108  
(612) 641-0039

Bulk Rate  
U. S. Postage  
PAID  
Permit No. 2047  
St. Paul, MN

# The CompuKeys™ Breakthrough



# *CompuKeys, Inc.*

St. Paul, MN 55108

P.O. Box 8142

(612) 641-0039

Dear Educator:

As every educator is aware, microcomputers are having a major impact on schools and students. When students are taught to use the microcomputer keyboard appropriately, using the right fingers and the right techniques, they actually have more time available for the "traditional" curriculum. But when this is not done, their two-finger ("hunt and peck") use of the microcomputer actually hinders their educational growth and creates a frustrating classroom environment.

Because of this, increasing numbers of schools, from elementary through post-secondary, have become interested in providing appropriate keyboarding instruction to their students prior to using the microcomputer for other applications. Unfortunately, a number of the software packages that are being sold as keyboarding packages have been developed by persons who are not knowledgeable about keyboarding or keyboarding learning processes. As a result, many students are still not acquiring appropriate keyboarding skills.

Based on more than 20 years of personal research in keyboarding, my experience as a teacher educator at a major midwestern university, and an extensive review of the research of others, I have designed a new keyboarding software package that is compatible with everything we know about how high-level skill in keyboarding is acquired. Further, this package is fully managed to relieve the teacher from much of the drudgery usually associated with keyboarding instruction. With this management package, student progress is monitored automatically.

You can now provide excellence in keyboarding instruction to your students through a low, affordable introductory price. All students may have access to this program at very low cost through a license agreement that will permit unlimited duplication within your district. Until the end of the current school year, we are providing such licenses at 60% savings for both the secondary and elementary editions of both Alphabet and Numbers & Symbols disks. There is no additional cost other than the very minimal cost of blank disks on which to copy the program. If you do not wish to license your entire district, individual schools can be licensed, or individual disks can be purchased at the prices listed on the order form. As part of this promotion, orders exceeding \$100 will receive a free copy of my monograph, published by Delta Pi Epsilon, entitled Teaching Keyboarding/Typewriting. We look forward to receiving your order and helping your students acquire excellence in keyboarding!

Sincerely,



Gary N. McLean, Ed.D.  
President

**See how affordable a license can be for your district!**

# Affordable!

## CompuKeys LICENSE AGREEMENT PRICING

Compare your savings. (60% price reduction on both Elementary and Secondary versions good through the end of the current school year.)

Student Enrollment	Normal Price Elementary or Secondary	Promotional Price 60% Off
100	\$ 500.00	\$200.00
300	\$ 500.00	\$200.00
500	\$ 500.00	\$200.00
700	\$ 500.00	\$200.00
900	\$ 500.00	\$200.00
1,100	\$ 550.00	\$220.00
1,300	\$ 650.00	\$260.00
1,500	\$ 750.00	\$300.00
1,700	\$ 850.00	\$340.00
1,900	\$ 950.00	\$380.00
2,100	\$1,050.00	\$420.00
2,300	\$1,150.00	\$460.00
2,500	\$1,250.00	\$500.00
2,700	\$1,350.00	\$540.00
2,900	\$1,450.00	\$580.00
3,100	\$1,550.00	\$620.00
3,300	\$1,650.00	\$660.00
3,500	\$1,750.00	\$700.00
3,700	\$1,850.00	\$740.00
3,900	\$1,950.00	\$780.00
4,100	\$2,050.00	\$820.00
4,300	\$2,150.00	\$860.00
4,500	\$2,250.00	\$900.00
4,700	\$2,350.00	\$940.00
4,900	\$2,450.00	\$980.00
5,100	\$2,550.00	\$1,020.00
5,300	\$2,650.00	\$1,060.00
5,500	\$2,750.00	\$1,100.00
5,700	\$2,850.00	\$1,140.00
5,900	\$2,950.00	\$1,180.00
6,100	\$3,050.00	\$1,220.00
6,300	\$3,150.00	\$1,260.00
6,500	\$3,250.00	\$1,300.00
6,700	\$3,350.00	\$1,340.00
6,900	\$3,450.00	\$1,380.00
7,100	\$3,550.00	\$1,420.00
7,300	\$3,650.00	\$1,460.00
7,500	\$3,750.00	\$1,500.00
7,700	\$3,850.00	\$1,540.00
7,900	\$3,950.00	\$1,580.00
8,100	\$4,050.00	\$1,620.00
8,300	\$4,150.00	\$1,660.00
8,500	\$4,250.00	\$1,700.00
8,700	\$4,350.00	\$1,740.00
8,900	\$4,450.00	\$1,780.00
9,100	\$4,550.00	\$1,820.00
9,300	\$4,650.00	\$1,860.00
9,500	\$4,750.00	\$1,900.00
9,700	\$4,850.00	\$1,940.00
9,900	\$4,950.00	\$1,980.00

Here's how to order:

Complete this order form and mail to:

**CompuKeys, Inc.**  
P.O. Box 8142  
St. Paul, MN 55108

### 30-Day Money-Back Guarantee

If you are not satisfied with the CompuKeys' software, return the package in resaleable condition and we will refund the purchase price.\*

\* Not applicable to licensing agreements.

### ORDER FORM

- Send Demo Disk. (Enclose check for \$5.00)
- Send information on license agreement.
- Place my order for the following:

Item/Description	Quantity	Price	Total
Alphabet Disk		\$39.95	
with Management Disk		\$59.95	
Number & Symbol Disk		\$39.95	
with Management Disk		\$59.95	
Alphabet and Number & Symbol Disks		\$59.95	
with Management Disk		\$79.95	
Additional student disks (on the same purchase order)		\$15.00	

Check enclosed P.O.# \_\_\_\_\_

Visa # \_\_\_\_\_ Exp. Date \_\_\_\_\_

RUSH TO: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Authorized Signature \_\_\_\_\_

# Innovative Yet Affordable!

Right now you can have the managed keyboarding tutorial by CompuKeys, the revolutionary way to teach keyboarding at the elementary and secondary levels. Take a look. Try it out. We're sure you will agree that it's a better way to teach—a better way to learn.

Created by professional keyboarding, elementary education, and programming experts for classroom use with Apple® II+, IIe, and IIc, CompuKeys is based on psychologies of learning and recognized research into how keyboarding is actually learned.



Student Tutorials

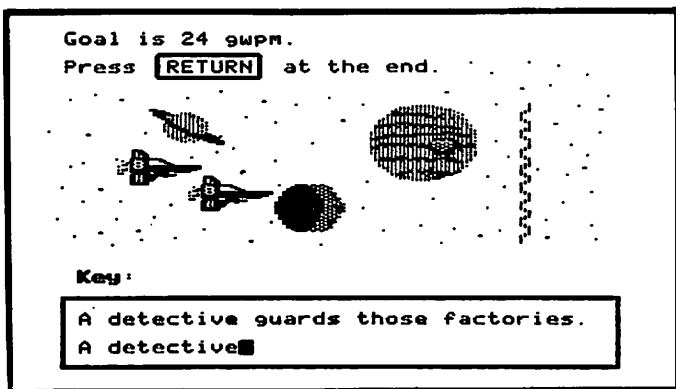
This unique software consists of two educational packages with full documentation:

- **Alphabet Disk** includes eleven alphabetic tutorial lessons.
- **Number & Symbol Disk** includes seven number and symbol tutorial lessons.

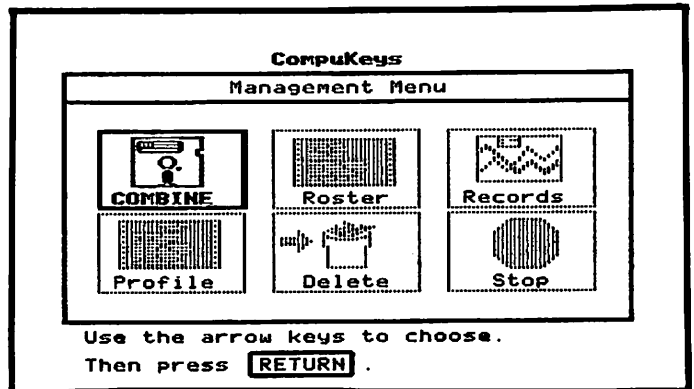
The **Management Disk** may be purchased with each package. This disk saves students' scores and prints reports.

## DOES WHAT MAJOR KEYBOARDING PACKAGES HAVE FAILED TO DO:

- easy to use
- short lessons
- content from a variety of fields
- full-color, animated graphics
- open exits from lessons
- frequent lesson re-entry points
- highlights errors for easy identification
- instructional focus on self-competition.
- adjusts to individual skill levels
- designed by educators
- more emphasis on tutorial
- accepts entry speeds in excess of 140 gwpm
- learning games integrated into lessons
- teacher options—including error limits and student numbers or names
- sort options on class roster, records, and profile
- utilities include disk label maker
- manages a classroom set of disks



Educational Games



Tracks Student Progress

## PURCHASE OPTIONS:

- **License Agreement**-permits unlimited duplication within school or district
- **Individual Packages**-price can be applied to licensing agreement

Here's how to order:

Complete this order form and mail to:

**CompuKeys, Inc.**  
P.O. Box 8142  
St. Paul, MN 55108

### 30-Day Money-Back Guarantee

If you are not satisfied with the CompuKeys' software, return the package in resaleable condition and we will refund the purchase price.\*

\* Not applicable to licensing agreements.  
\* \* Specify Elementary or Secondary edition.

## ORDER FORM

- Send Demo Disk.** (Enclose check for \$5.00)
- Send information on license agreement.**
- Place my order for the following:\*\***

Item/Description	Quantity	Price	Total
Alphabet Disk		\$39.95	
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Alphabet and Number & Symbol Disks		\$59.95	
with Management Disk		\$79.95	
Additional student disks (on the same purchase order)		\$15.00	

**Check enclosed** P.O.# \_\_\_\_\_

Visa # \_\_\_\_\_ Exp. Date \_\_\_\_\_

**RUSH TO:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Authorized Signature \_\_\_\_\_

# CompuKeys™ Keyboarding Series

Right now you can have a demo disk of CompuKeys Keyboarding Series, the revolutionary way to teach keyboarding at the elementary education level, **FREE** for 30 days. Take a look. Try it out. If you don't agree that it's a better way to teach--a better way to learn--just return the disk and documentation with no further obligation.

Created by professional keyboarding, elementary education, and programming experts for classroom use with Apple® II+, IIe, and IIc, CompuKeys is based on psychologies of learning and recognized research into how keyboarding is actually learned.

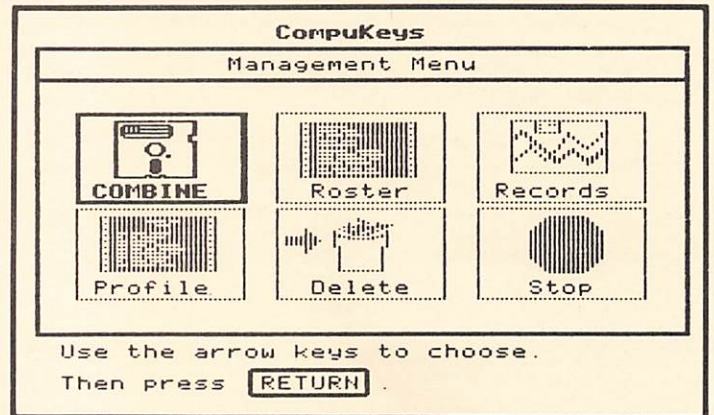
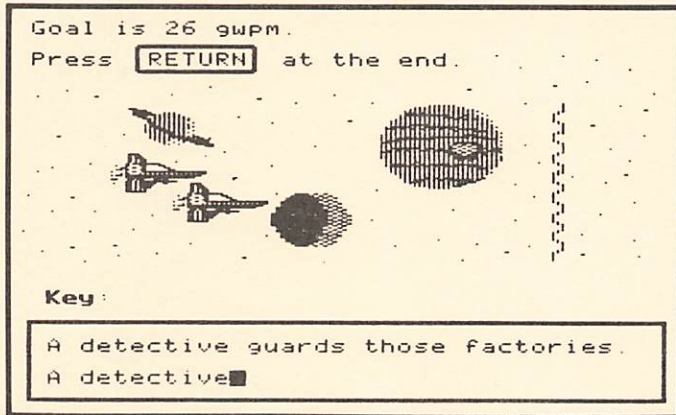


This unique software package consists of three educational disks, with full documentation:

- **Alphabet Disk** includes eleven alphabetic lessons.
- **Number & Symbol Disk** includes seven number and symbol lessons.
- **Drill & Timing Material Disk** includes drills, teacher-authored timings, and provision for timings from texts.
- Class management is available with each disk.

## DOES WHAT MAJOR PUBLISHERS HAVE FAILED TO DO:

- easy to use
- short lessons
- appropriate reading levels
- full-color, animated graphics
- open exits from lessons
- frequent lesson re-entry points
- highlights errors for easy identification
- instructional focus on self-competition
- content from a variety of fields
- designed by educators
- more emphasis on tutorial
- accepts entry speeds in excess of 140 gwpm
- learning games integrated into lessons
- teacher options--including error limits and student numbers or names
- sort options on class roster, records, and profile
- utilities include disk label maker
- manages a classroom set of disks



## PURCHASE OPTIONS:

- License agreements - School districts may purchase a license permitting unlimited duplication for use in their K-12 classrooms.
- Individual packages

## CompuKeys FREE TRIAL Reservation Form

**YES!** Please send me CompuKeys Keyboarding Series Demonstration Disk **free for 30 days**. I understand that I may return it in resaleable condition within 30 days for full credit. If I keep the materials beyond the 30 day free trial period, I will be billed \$15.00.

### CompuKeys Keyboarding Series

Item/Description	Price	Available (1985)
Alphabet Disk	\$ 39.95	spring
with Management Disk	\$ 69.95	summer
Number & Symbol Disk	\$ 39.95	spring
with Management Disk	\$ 69.95	summer
Drill & Timing Material	\$ 39.95	late fall
with Utilities Disk	\$ 69.95	late fall
Alphabet and Number & Symbol Disks	\$ 59.95	spring
with Management Disks	\$ 89.95	summer
All 3 packages with Management and Utilities Disks	\$119.95	late fall
Additional student disks (on the same purchase order)	\$ 15.00	

RUSH TO:

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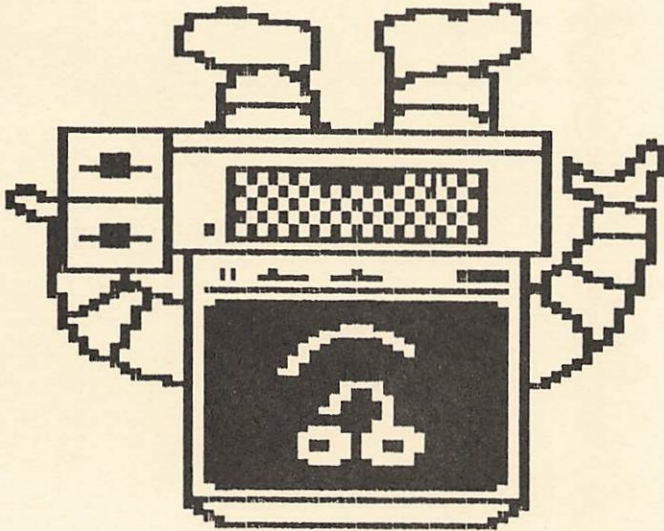


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Introducing the most comprehensive, research-based,  
keyboard-learning courseware ever produced.



It doesn't compute!

Computing without  
keyboarding?

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**AUTHORS:**

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PLACE  
STAMP  
HERE

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The software accepts entry speeds in excess of 140 gross words per minute.

Games have been provided and integrated into each lesson. One type of game is provided for each objective--speed and accuracy development.

Competition is based on the student's earlier performances.

The program manages the class records, with the potential to have records displayed on the screen or printed.

Teachers are given a number of options, e.g., setting error limits, turning sound on or off, etc.

Teachers may enter student names and numbers or have students do so.

Rosters, records, and profiles may be printed by alphabet or student number order.

The software will accept any entry speed that students provide.

Games add variety to enhance student motivation. Speed and accuracy, according to research, must be developed separately.

Focus is on self-competition rather than competition with other students.

Students have access to individual past performance by graph and statistics. Teachers have access to printed individual records and class profiles, eliminating the need to keep written records.

While the developers have used defaults that fit most settings according to research, flexibility is provided for exceptional circumstances.

Teachers have the option of improved accuracy with increased teacher work, or they may let students enter data with the chance of increased errors.

Provides a variety of teacher options.

Utilities include a label maker for disks.

The user support manual includes all program screens with an explanation of why the program functions as it does at each point.

All content material for each lesson is included in the user support manual.

Software is standalone.

This permits a professional appearance on school-duplicated disks when purchased by license.

Any screen can be identified easily. Teachers with no background in keyboarding can determine why various educational judgments were made.

The user support manual can also serve as instructional material for students who do not have access to computers, only typewriters.

No printed material is needed by students to use the software. The primary role of the teacher is to ensure that appropriate techniques are being used.

#### HOW SHOULD STUDENT PERFORMANCE BE EVALUATED?

Evaluation should be taking place continually. This simply means providing students with feedback on their progress toward their objectives (as identified previously). The management system included in the software has been designed to provide such feedback on a regular basis. Teachers also need to provide verbal feedback to enhance motivation and the learning process.

If keyboarding instruction is to be graded, then it is necessary for teachers to grade based on progress toward the objectives. Such grading MUST NOT be done on practice material. Rather, tests should be administered toward the

end of instruction and should consist of material similar to that which the students have been practicing. For this software, material should consist of approximately 100 strokes (20 "standard" words). Students who have successfully accomplished the software objectives should finish the material within at least one minute (i.e., 20 gross words per minute) and have no more than three words typed incorrectly.

### WHAT ARE MY PURCHASING OPTIONS?

Two options for purchase are available. Prices are subject to change without notice.

#### Option 1: INDIVIDUAL UNITS

Individual packages may be purchased for the following prices. Individual disks may not be copied or altered.

Item/Description	Price	Available (1985)
Alphabet Disk with Management Disk	\$ 39.95 \$ 69.95	spring summer
Numbers & Symbols Disk with Management Disk	\$ 39.95 \$ 69.95	spring summer
Drill & Timing with Utilities Disk	\$ 39.95 \$ 69.95	late fall late fall
Alphabet and Numbers & Symbols Disks with Management Disk	\$ 59.95 \$ 89.95	spring summer
All 3 packages with Management and Utilities Disks	\$119.95	late fall
Additional student disks (on the same purchase order)	\$ 15.00	

Individual unit purchases will apply toward the license fee if the school district later decides to proceed with Option 2. One backup copy will be provided with each package. Disks will be replaced at a charge of \$10 per disk upon return of the original disk.

Students may exit a lesson at any point and reenter at pre-designated points if the lessons are managed.

Actual words and sentences are used as soon as possible in the practice material. No nonsense syllables are used.

Content comes from a variety of fields--math, social studies, reading, health, etc.

No stroke-by-stroke pacing of students is provided. Pacing is in larger blocks.

Students may correct errors at any point by backspacing and correcting.

Students are given feedback on speed following each line keyed. They are also given feedback if the error limit has been exceeded.

Errors made by students are highlighted.

Students do not have to go through previously completed work to reach the point at which they left a lesson. They may also review reaches from previously completed lessons at any point.

Transfer and motivation are maximized when letters and words are used in the context in which they will ultimately be used.

Keyboard learning enhances learning in other fields.

Stroke-by-stroke pacing leads to metronomic rhythm which interferes with developing appropriate keyboarding responses.

This is the process that will be used by the students at a later point, thus maximizing transfer.

Contiguity (immediacy) of feedback is an important factor in developing keyboarding skills.

Such feedback permits students to identify quickly and easily the kinds of errors they have made.



The program uses students' names, reinforcement, and an animated logo. Such personalization may be helpful in increasing interest and motivating students.

Initial emphasis is on keying speed with generous error limits. Research has shown consistently that keyboarding skill is developed most efficiently when accuracy development takes place after speed development.

Throughout the program, students are reminded of the correct fingers to use. The major problem for students in learning to keyboard is remembering to use the correct fingers.

Graphics depict actual hand position and movement for proper keystroking. Students can see the actual motions to be made when keyboarding properly.

In the beginning stages, visual access to the keyboard is encouraged. As skill develops, students are encouraged to keep their eyes off the keyboard (but they are not prohibited from watching, if needed). Since students MUST be able to see the keyboard initially to make the desired response, they are not given an incorrect expectation that they can key without watching. Even experts "peek"!

A wide variety of drills is provided. Each type of drill is based on sound theory; variety adds to student interest.

Content is based on adaptation of word lists from four major publishers of recent readers, grades one through three. Content is at a level of understanding for a high percentage of students above grade four, including special education students.

## Option 2: LICENSING FOR UNLIMITED DUPLICATION

A school district may purchase a license permitting them to make unlimited copies for use in their K-12 classrooms ONLY. If other schools wish to be included in the license agreement (e.g., vocational-technical schools, community colleges, etc.), their enrollment would be added to the K-12 enrollment. If individual schools wish to purchase a license, the individual school fees will apply.

CompuKeys, Inc., will provide two master sets of disks and one user support manual. Separate user support manuals may be purchased for an additional \$25.00 each. Separate disks may be purchased at an additional cost of \$7.50 per disk if the district chooses not to duplicate their own disks.

The fee for such a license will be based on student enrollments in grades K-12, on the following basis:

**Alphabet Disk and Numbers & Symbols Disk:** 50¢ per student per package, with a minimum of \$500 and a maximum of \$5,000 for 10,000 students.

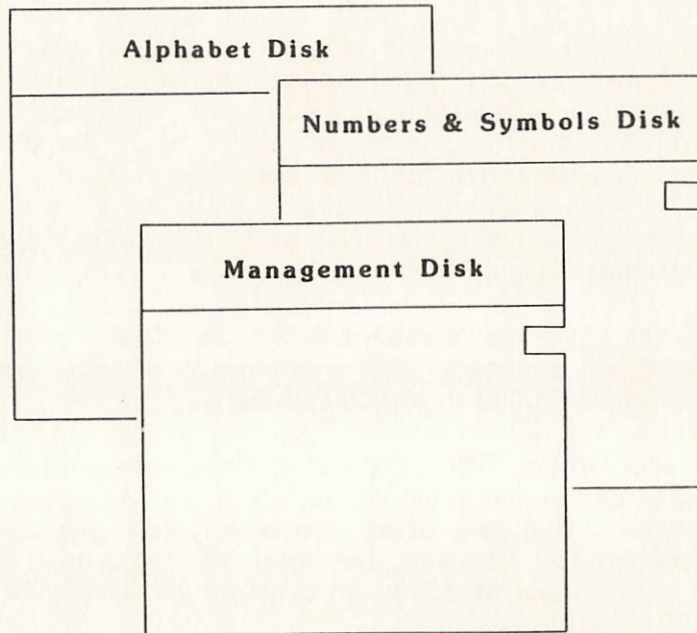
**Drill and Timing Disk:** 25¢ per student with a minimum of \$250 and a maximum of \$2,500 if the Alphabet and Numbers & Symbols Disks license has been purchased. Otherwise, the licensing fee shall be 35¢ per student with a minimum of \$350 and a maximum of \$3,500 for 10,000 students..

Districts with an enrollment greater than 10,000 students may negotiate individual contracts.

Individual school fees will be based on the total number of students (full-time and part-time) in the school, or, under special circumstances to be determined by CompuKeys, Inc., the program of study in which the software will be used. The same minimum fees will apply.

## SPECIFICALLY, WHAT'S IN THIS PACKAGE?

The following diagram shows the relationship among the three CompuKeys diskettes for which this user support manual is provided.



You will need to decide if you want students to learn the number and symbol keys. If you do, they should go on to the Numbers & Symbols Disk when they have completed the Alphabet Disk. If you decide that they do not need to learn those keys, students should go to the Drill and Timing Disk. This disk, among other things, is designed to permit you to enter practice material. This is most useful for teachers of students with vocabulary skills beyond the third grade level, or for teachers who want the students to practice material in a specific subject area, such as science or social studies, or in specific content areas. When teachers provide this input, students will receive feedback on both speed and accuracy.

## FEATURES AND BENEFITS OF CompuKeys

FEATURE	BENEFIT
The software was designed by a team including a recognized authority on keyboarding and professor of business education at a major university.	Years of research and writing of typewriting texts and methods books provide authority for software design.
Lessons and games are based on research in psychology, education, and keyboarding.	Principles employed are educationally sound and used because of their effectiveness, not their technological or fadish appeal. Other existing keyboarding games are based on incorrect assumptions about how keyboarding skill is developed.
The introductory material is brief but provides the necessary technique instruction for efficient keyboarding.	Students do not like to read extensively. Through graphics, students are shown how to keyboard for best results.

usage, the order chosen for presentation may not appear to be systematic.

3. the need to present potentially competing responses close together, though not necessarily within the same lesson. A frequent cause of stroking error is the "substitution" error--where one key that requires almost the same response as another substitutes for it. For example, "e" and "i" require the same reach using the same finger, but on opposite hands. By presenting the keys close together, students have considerable opportunity to learn to distinguish the responses between the two keys with a minimum of confusion.
4. the need to present the most commonly used function keys (such as: return, space bar, arrows, and shift) early, so that sentences can be typed and the instructional components of the software can be accessed and used efficiently.

#### WHAT IS MY ROLE AS TEACHER?

The software is very easy to use and is designed to be self-instructional, with the only supplementary material necessary being existing classroom materials. Students should begin with the Alphabet Disk and complete the introduction as well as all lessons. If your students have not used the computer before, you will need to teach them how to turn on the monitor, boot (turn on) the computer, and handle the disks. Your most important role as teacher is to be available to monitor student progress and encourage student attention to the instructions provided by the software. This may include frequent reminders to use appropriate fingering or techniques, or assisting students by adjusting chairs or desks (where possible). You may have to provide footrests when students cannot touch the floor, or pillows/books when students cannot reach the keyboard comfortably. If a printer is available, and if you want students to print out their individual graphs, you will need to teach the use of the printer.



#### ALPHABET DISK

This student disk includes 11 tutorial lessons introducing the alphabetic keys as well as some punctuation and special function keys.

Additional practice material is integrated into the lessons in game formats for speed development. Upon completion of the disk, a game format for accuracy development is provided.

An option to review reaches for each lesson is included.

This disk may be used alone without management, or with the **Management Disk** to manage student records.



#### NUMBERS & SYMBOLS DISK

This student disk includes 7 tutorial lessons introducing the numeric, special function, and programming keys, using both the keyboard numbers and a numeric pad.

Additional practice material is provided in game formats for speed and accuracy.

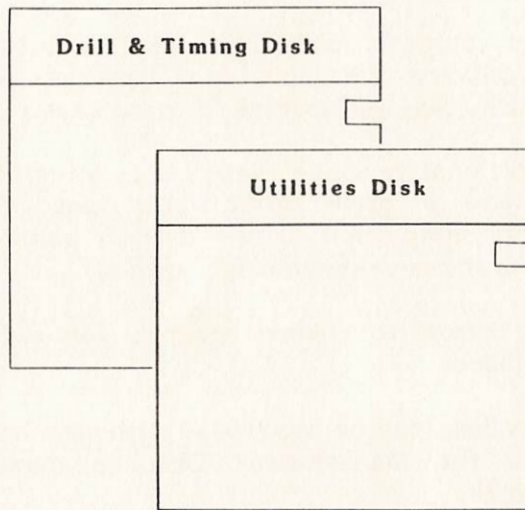
An option to review reaches for each lesson is included.

This disk may be used alone without management, or with the **Management Disk** to manage student records.



#### MANAGEMENT DISK

This disk allows the teacher to manage student records on the **Alphabet** and **Numbers & Symbols Disks**.



### DRILL AND TIMING DISK

This student disk includes drills which pace the students to encourage the development of speed and accuracy.

The teacher may use the **Utilities Disk** to enter practice material on this disk. Feedback on both speed and accuracy is provided.

Students have the option of entering material from texts or other copy with feedback provided on speed. Students may then practice proofreading skills by locating their own errors.

### UTILITIES DISK

This disk allows the teacher to author material on the **Drill and Timing Disk** and manage student records on that disk.

A frustration facing students and teachers, alike, is the lack of drill material with proven value in improving student accuracy. At the present time, the only known ways to improve accuracy are through practice and keying at a speed that is slightly lower than the student's maximum speed. Some of the drills provided on the Drill and Timing disk pace the students to keep them slightly below their maximum speed, thus encouraging the development of accuracy.

Knowledge of results is an especially important tool in the development of good keyboarding skills. Thus, with each practice exercise, the student is given information about speed performance and, in later lessons, about accuracy. In addition, the management portion of this package provides both student and teacher with a graphic display of performance to permit the early identification of plateaus and to encourage students, particularly in the early stages, with visual evidence of the rapid improvement they will probably experience. Knowledge of results is one of the reasons why students need visual access during early lessons.

### WHAT DETERMINES THE ORDER IN WHICH THE KEYS ARE PRESENTED?

Many factors are involved in deciding the order in which to present the keyboard. Such considerations include:

1. the ease of making the keystroke. Home row keys are the easiest, followed by "up" reaches and "down" reaches, with the top row (numbers and symbols) the most difficult. In addition, index finger keys are the easiest with the ring and little fingers the most difficult.
2. the frequency of use of the keys. One of the objectives in developing the drill material was to permit the use of high frequency words appropriate to third grade vocabulary as soon as possible. To do that, it was necessary to present first the keys that are used most often. Since the keyboard was not designed systematically for today's

on the appropriate response to be made. Kinesthetic responses in keyboarding are developed by making numerous responses to a given stimulus. Thus, students will "learn" to strike an "r" when desired by striking that key many times.

Keyboarding, however, is not simply learning the 26 alphabetic keys, 10 number keys, and various symbol keys. Efficiency in keyboarding is developed by "chaining"--that is, typing combinations of keys as single units. Thus, it is necessary to "learn" to key "er," "fr," "tr," etc., in learning the "r" key. Such chains are not formed cognitively. Rather, they are developed by repetitious typing of letters forming the chains as closely together as possible. While teachers over the years have used music and other devices to develop "rhythm," the outcome, instead, has been to inhibit the development of chains. Metronomic rhythms (stroking keys with equal intervals between) is harmful in developing keyboarding skill and should not be used.

While many people learned to type under conditions of not watching their fingers or the keyboard, research has provided evidence that watching the fingers, keys, or product produces skill more quickly. Thus, students should receive as much feedback as possible from these sources in the early stages of learning. Encouragement (not prescription) to keep eyes on the copy and away from the keyboard should be given as students acquire competence. Wall charts hinder this process and are not useful learning tools because they inhibit visual access to the keyboard and immediate feedback. In addition, wall charts misrepresent the relationship of the keys to each other.

Another area in which learning has typically been hindered has been the too early emphasis on accuracy. While the end goal of keyboarding is learning how to key accurately, it is important that early emphasis be on speed, with later emphasis moving toward accuracy. Thus, in this software, during the presentation lessons on the keyboard, emphasis has been placed on speed. Generous error limits have been provided simply to keep students from striking keys indiscriminately.

## WHAT SHOULD I PURCHASE?

What you should purchase depends on what you intent to teach, if you want to save your student records, and how you organize your class.

Before you purchase any keyboarding software, you should decide the reason you want to teach keyboarding. (See pages 2-4 of this manual.) Do you want to prepare students for word processing or some of the many other applications of the microcomputer such as programming, or using data bases and spreadsheets?

If your goal is to:

1. prepare students for word processing, you must purchase a package which teaches alphabetic, punctuation, and special function keys.
2. prepare students for some of the other applications, you must purchase a package which teaches alphabetic, punctuation, number, symbol, and special function keys.
3. keep track of your students' progress on the computer, you must purchase a package with management capabilities.
4. help students develop substantial gains in speed and greatly improve accuracy through longer paragraph and page drills, you must purchase a package which allows students to practice material of up to 4,000 characters.

### What does CompuKeys offer?

USE:	CompuKeys PACKAGE:
Teach word processing Manage student records	Alphabet Disk with Management Disk
Teach other applications Manage student records	Alphabet Disk Numbers & Symbols Disk with Management Disk
Develop speed and accuracy	Drill and Timing Disk
Author material and manage student records	Utilities Disk

### How many copies should I purchase?

The answer to this question depends on how you organize your class. You must have one package for your class with enough additional student disks for each computer in your teaching environment. The chart on the following page should help you determine the number of copies you should purchase for your classroom needs.

by themselves, within a classroom where other activities are taking place. Two drawbacks to this approach are a loss of teacher attention to the learning process and missing the information being presented to the rest of the class during the time a student is learning the keyboard. The sound on the computer also should be turned off so it is not distracting to the rest of the class.

5. OPEN LAB: Students may need to be sent to a central location (e.g., a library) to complete their keyboarding lessons. This approach has both of the problems outlined in #4, above, as well as removing the student from teacher observation. On the other hand, if the professional in that environment is interested and competent in keyboarding instruction, and has time to give to individual students, this approach can work well.
6. HOME USE: Students may check out the software for use at home. This option is least desirable because it limits instruction to those with the appropriate equipment at home, and it has all of the other drawbacks outlined above for self-instruction. On the other hand, such an approach is workable when equipment does not exist in the school, and parents can be drawn into the educational experience. This approach may also be useful for review purposes.

### HOW DO STUDENTS ACQUIRE GOOD KEYBOARDING SKILLS?

Several principles apply to learning how to keyboard, all of which have been incorporated into the development of this software. Many practices that have been used in the past to teach typewriting have since been found not to be useful, and, in many cases, have proven to be detrimental in learning to keyboard.

The principal sense that is used in learning to keyboard is kinesthesia--a muscular sensation that provides information

## HOW CAN I ORGANIZE MY KEYBOARDING CLASS?

The delivery of keyboarding instruction can take place in many different ways:

- 1. CLASSROOM LAB:** A class can be offered in keyboarding within a computer lab setting in the elementary school. In this environment, each student will have access to a computer or a typewriter. It is not effective use of time to have more than one student assigned to the same keyboard. A person learns to key by keying. If there are not sufficient computers for each student to have access to one, it is possible to have some students assigned to a typewriter for drill purposes, using the computer to complete each new lesson. The sentences that are reproduced in the user support manual can be duplicated for student use in such a setting. This model is the preferred one--time is used most efficiently, and the teacher maximizes the opportunity for help and entry.
- 2. DISTRICT LAB:** A similar setting can be used in a junior or senior high school. Students would need to be transported to the school, or classes could take place on weekends, after school, or during the summer. If this model is used, ample recognition must be given to the appropriate attention span for the ages of the students. Having fourth graders sit through two hours of keyboarding instruction each day for a five-week summer session does not make much sense.
- 3. SMALL GROUP:** There may be some instances where small groups can be provided with adult supervision, either in special classes (e.g., special education, gifted education) or through the use of adult volunteers or paraprofessionals.
- 4. LIMITED COMPUTERS/ROTATION:** Where there are not sufficient machines to permit full class participation, students may need to learn in small groups, or even

Instructional Setting	# of Students	# of Computers	COPIES TO PURCHASE	
			Packages (1 student, 1 management)	Additional student disks
Individual class	1-50	1	1	2
Individual class	1-50	3	1	14
Lab	1-200 (max: 50/class)	15	1	24
Lab	1-200 (max: 50/class)	25	1	29
Lab	1-200 (max: 50/class)	30	1	49
Lab	1-200 (max: 50/class)	50	1	

Each set of diskettes can accommodate from 1 to 200 students with a maximum of 50 students in each class (up to 4 classes of sections of 50 students each). Thus, if the set of disks is used by individual teachers, 4 teachers, with up to 50 students each, may share one set of disks.

If, however, one teacher is responsible for teaching keyboarding at the elementary or secondary level, they may purchase a classroom set equivalent to the number of computers in the lab and use that set with 4 classes or sections of up to 50 students each.

If you intend to teach over 200 students, you must purchase 1 package and enough student disks for each computer for each group of 200 students or portion thereof.

**If you have a large student population, contact CompuKeys, Inc. about licensing CompuKeys for unlimited duplication.**

## WHO ARE THE AUTHORS?

Gary N. McLean is a Professor of Business Education at the University of Minnesota, St. Paul. Dr. McLean has over 20 years of experience in teaching keyboarding/typewriting (including his own six children) and conducting research on the subject. He has authored numerous articles and given hundreds of presentations on keyboarding. He has authored several textbooks, as well as a monograph on TEACHING KEYBOARDING/TYPEWRITING. Dr. McLean has served as a consultant on keyboarding to numerous school districts and corporations. He has also served as a consultant on other keyboarding software materials.

Ronald R. Geiser has been programming for 10 years. Mr. Geiser has been an educational programmer for a large computer consortium since 1981. He specializes in tutorial, management, and authoring systems. His objective has been to set new user-friendly standards for each system he has programmed. His experience includes tutorial, management, and authoring systems for English, physical education, computer literacy, and keyboarding. Mr. Geiser is currently working on his own word processing package and support utilities.

Timothy F. Cimbura has been programming since the beginning of the Apple computer. His experience and talents lie especially in the graphics and sound aspects of programming. His major accomplishment is the character generator APEXTEXT, which is currently being used in many educational packages worldwide. Mr. Cimbura is also president of Apex Software, publisher of APEXTEXT.

David C. Lindgren has a Masters degree in Business Education and is a teacher at Hudson Senior High School in Hudson, Wisconsin. Mr. Lindgren has been teaching business education, including keyboarding, for over 14 years. He has extensive experience in using microcomputer courseware. Mr. Lindgren has used several keyboarding software packages, in his classrooms.

## WHO SHOULD TEACH ELEMENTARY KEYBOARDING?

There are several options available for providing elementary keyboarding instruction:

1. the regular classroom teacher
2. an elementary teacher who is given specific responsibility for keyboarding instruction
3. a business education teacher from the junior or senior high school
4. a support person within the school, such as a media aide, librarian, computer lab instructor, etc.
5. a community volunteer
6. in some instances, a special education or gifted education teacher
7. students left on their own with instruction provided entirely from the software

Research at present does not permit a final answer as to who is in the best position to provide such instruction. The last choice listed (no instructor) is probably not a good choice. No software can provide feedback as to the appropriateness of the students' techniques and correct fingering. Instructors should, at minimum, be competent at keyboarding, have some understanding of the developmental needs of elementary school children, and understand the rudiments of keyboarding instruction.



## WHAT OBJECTIVES SHOULD I HAVE FOR MY KEYBOARDING STUDENTS?

What you can reasonably expect your students to do depends largely on their ages and the amount of instruction provided them. In general, students need about 30 hours of instruction to acquire the ability to use the correct fingers to key without watching the keyboard for an inordinate amount of time.

Following 30 hours of instruction at the upper elementary grades, average students will:

1. key alphabetic material for one minute at approximately 25 gross words per minute (gwpm). (Gross words per minute takes into account the strokes keyed without adjustment or penalty for errors.) Without skill at this level, students receive little reinforcement to continue using correct fingering.
2. key alphabetic material for one minute with no more than three errors. Emphasis on accuracy (except to prevent the entry of nonsense) should not begin until students are keying approximately 25 gwpm.
3. use appropriate fingers for all alphabetic keys.
4. key number and symbol material for one minute at approximately 20 gwpm.
5. key number and symbol material for one minute with no more than four errors.
6. use appropriate fingers for number and symbol keys.

Students should NOT be expected, within this timeframe, to key without watching their fingers. Even experts watch their fingers at times. Students at the ability level of these students will watch their fingers, the keyboard, or the monitor much of the time.

Joyce M. Lindgren is a licensed elementary teacher. Ms. Lindgren has a Masters degree in Instructional Design/Educational Computing and has been designing and developing educational software for 10 years. She is currently Coordinator of Instructional Services for a large educational computer consortium. Her major responsibilities for the past several years have been designing and developing keyboarding, word processing, and computer literacy materials for students in grades K-12.

## WHERE CAN I GET HELP?

A bibliography of useful texts and periodical references is appended. For information about learning to keyboard, the West and McLean references are particularly recommended. Specific questions can be directed to:

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St. Paul, MN 55108  
(612) 373-9723

CompuKeys, Inc.  
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St. Paul, MN 55108  
(612) 641-0039

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that 62 percent of all elementary schools in the United States had at least one microcomputer in use for instructional purposes. There is no question that this number has increased dramatically since the time of that survey. Without instruction in keyboarding, students have access only to a "hunt and peck" approach to finding the correct keys.

In the early stages of microcomputer use, students may be able to get by with "hunting and pecking." No inordinate amount of time is wasted while students look for a "Y" or "N" to respond to a specific question. However, when the teacher is ready to move students on to word processing or some of the many other applications of the microcomputer, students who have not developed appropriate skills find that they spend most of their time looking for keys rather than entering information. Classroom time is then used inefficiently. Students and teachers alike are frustrated, and the computer becomes a hindrance to learning rather than an aid.

Further, what students learn at early stages affects later learning. Thus, if "hunt and peck" habits are established, they become very difficult to break when the students are older and are attempting to develop greater proficiency at the keyboard. And, no matter how good students may become at such "hunt and peck" methods, their skill level is capped sooner (at about 40 gross words per minute at most) and fatigue is greater than when appropriate fingering is used.

At this time, using the computer effectively is motivating for most elementary school students. Capitalizing on this factor can enhance the learning of all students, from students with special needs to gifted students. The built-in individualization of instruction that occurs on the computer is a positive factor for dealing with a range of student abilities. Again, however, the more students are capable of using the keyboard correctly, the more they are able to take advantage of what the computer has to offer.

## WHAT IS KEYBOARDING?

Keyboarding (or keying) has become a popular term to use to refer to the process of using the appropriate fingers on a typewriter or computer keyboard without regard for formatting problems. Thus, the primary emphasis of instruction in keyboarding is directed toward speed and accuracy of entering characters.

## AT WHAT GRADE LEVEL SHOULD INSTRUCTION IN KEYBOARDING BEGIN?

There is no one "right" answer to this question. There are studies indicating success in teaching keyboarding on the microcomputer to preschool children. Such instruction, however, requires intensive teacher attention and highly motivated students and, often, parental involvement. In addition, because of student hand size and psychomotor development, major adjustments may need to be made in how such students key.

By the time students are in the second to third grades, they are often physiologically capable of using the correct fingering and techniques for keyboarding. Most studies in keyboarding have indicated that student attention span, physiological development, and motivational levels seem to come together best at about the fourth grade. Thus, the materials used in CompuKeys has been drawn from third-grade reading material. This clearly does not preclude instruction at earlier stages if there is sufficient teacher support and flexibility.

## WHY SHOULD ELEMENTARY STUDENTS LEARN TO KEYBOARD?

There is no question about the popularity of the micro-computer in education and in the home, beginning as early as preschool. Studies conducted in September, 1983, indicated

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## BACKGROUND

Congratulations! You have selected the keyboarding software package that combines the best of educational research on the acquisition of keyboarding skill and "state-of-the-art" programming.

### WHAT ARE THE OBJECTIVES OF THIS MANUAL?

The objectives of this user support manual are to:

- o define keyboarding.
- o suggest the grade level at which keyboarding instruction should begin.
- o provide a rationale for keyboarding instruction at the elementary school level.
- o suggest objectives for an elementary school keyboarding course.
- o suggest options for delivering keyboarding instruction.
- o provide suggestions on how to organize a class for keyboarding instruction.
- o provide educationally sound procedures for teaching keyboarding.
- o explain how the order of key presentation was determined.
- o define the role of the teacher in a computer-presented keyboarding class.
- o identify the features of CompuKeys and explain how they benefit the students.
- o provide suggestions for evaluating student performance.
- o describe the options for purchasing software.
- o explain the overall keyboarding package and how the various disks relate to each other.
- o provide an order form for you to purchase CompuKeys.

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## STUDENT SAMPLE

This section of the user support manual will include screen displays of each screen the student will see, with an explanation of why the program functions as it does at each point. Any screen can be easily identified, and teachers with little background in keyboarding can determine why various educational judgments were made.

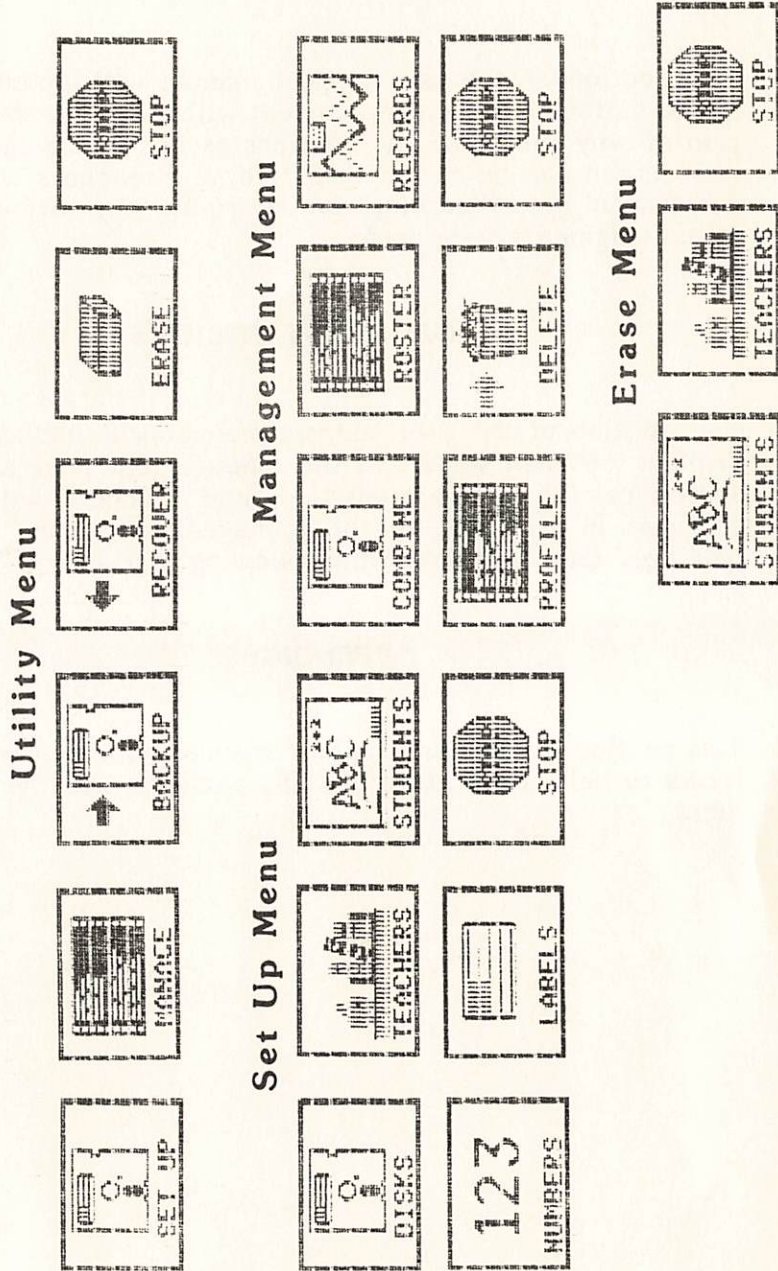
## MANAGEMENT UTILITIES

This section of the user support manual will include screen displays of each screen in the management program. Any screen can be easily identified, and teachers will be in-serviced in the use of the management system for this package. (See diagram on the following page.)

## APPENDICES

This section of the user support manual will include several items to help users integrate this package into the curriculum.

The diagram below shows the organization of the CompuKeys management system.



## CompuKeys KEYBOARDING SERIES

The purpose of this manual is to provide you with background information about keyboarding and to introduce you to the CompuKeys Keyboarding Series.

### WHAT IS CompuKeys?

CompuKeys is a courseware package designed to help students learn correct fingering and techniques for keyboarding, and to help them develop their keyboarding skills by practicing on appropriate sentence and paragraph materials.

The CompuKeys Keyboarding Series includes a complete management system, which allows teachers to monitor student progress without separate testing. Teachers may obtain rosters, records, graphs and profiles on one printout for 1 to 50 computers in the instructional setting.

Grade Level: Elementary Version  
Secondary Version

Type of Program: Tutorial/Drill and Practice/Educational Game

Hardware Requirements: 48K Apple II+, IIe, or IIc

Although the program only requires 48K, it will take advantage of additional memory.

A printer is required for the profile in the management system.

CompuKeys, Inc.  
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## DISTRIBUTION

CompuKeys is sold by CompuKeys, Inc. for use in education. Duplication of CompuKeys within the educational agency is prohibited unless the agency has licensed the courseware.

## DISCLAIMER

CompuKeys is sold without warranty with respect to its applicability to meeting the purchaser's needs. CompuKeys, Inc. will make every effort to assist users having difficulty with program use. However, any loss of data or other inconvenience resulting from using CompuKeys remains the liability of the purchaser.

Thank you for reviewing CompuKeys!

CompuKeys, Inc.  
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# CompuKeys™



**Managed Keyboarding Series**