keyboarding skills. Screen menus may help the inept user to make a particular program function more easily, but original data or text entry still has to be done from the keyboard. Anyone who has watched a frustrated user labor intensively over what should be a relatively effortless process will appreciate the magnitude of this barrier in the efficient use of all types of computers.

The traditional approach to solving this problem has been to defer the introduction of students to touch typing until they were in a secondary or tertiary level school setting. However, with the introduction of microcomputers into elementary schools, the timing of the teaching of these skills needs to be reconsidered. Secondly, the proliferation of computers throughout almost every sector of society, suggests that the voluntary aspects of the acquisition of keyboarding skills may be an expensive luxury. Politics aside, answers to these kinds of questions are almost self-evident. The opportunity to acquire keyboarding skills should be available to every student and every student should be encouraged to learn proper keyboarding techniques as early as possible in their academic careers.

While questions regarding why and when keyboarding skills should be developed are usually dealt with by external agencies, practical questions of how to implement programs to develop these kinds of skills are usually foremost on the mind of someone charged with the task of delivering instruction. In this case there is help. Two packages, the MECC Keyboard Primer (A-1 30) and MECC Keyboarding Master (A-13 1) are available to help teachers teach keyboarding. These programs are part of MECC’s (Minnesota Educational Computing Corporation) Computing and Information Collection and are available both to institutional MECC members and non-institutional members. The price for each package for non-members is $84.00 Cdn.

The first package, MECC Keyboarding Primer, contains an on-line introduction to the keyboard and eighteen lessons, each of which is designed to teach students the location of the keys and the correct stroking of alphabetic, numeric and special function

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keys. Through the use of a variety of games and drills, the second program, Keyboard-  
ing Master, builds on the basic skills developed in the Keyboard Primer and helps  
students to increase both their typing speed and their keystroke accuracy. If a structured  
approach to the development of keyboarding skills is desired, a teacher management  
utility disk is available with each package. It can be used to track the progress of up to  
three classes of 1 to 48 students. The Keyboarding Primer and Keyboarding Master  
will also run on a Corvus hard disk system.

In the introductory lesson of the Keyboarding Primer, students are presented with  
the following topics: pressing the space bar, body position and posture, home row  
finger placement and the function of the cursor. In an unstructured setting, students are  
allowed to choose any lesson in any sequence that they wish. In the structured environ-

ment, students are expected to either choose the next lesson in the sequence or review a  
lesson that they have completed earlier in the course.

Several design factors have been taken into account when these packages were  
developed. For example, when deciding the order in which to present the keyboard,  
such elements as the ease of making the keystroke, the frequency of key use, the need  
to present potentially competing responses close together, and the need to present the  
most commonly used function keys early were considered. Second, each of the lessons  
follow a consistent pattern of presentation. A preview of the skills to be addressed in  
the lesson is shown, then a graphic illustration of the proper finger position on the keys  
is given. Practice exercises are then presented and finally, after the completion of the  
lesson, a speed check taken.

No mention of errors is made to the student unless three or more errors are made in  
one content line. It is suggested in the reference section of the documentation that one  
area in which learning to keyboard is hindered is the premature placement of emphasis  
on accuracy. While the end goal of keyboarding is certainly accuracy, in the early  
stages of learning keyboard skills, it is felt that emphasis should be placed on speed  
rather than accuracy.

The only known way to improve accuracy is by practicing. The Keyboarding  
Master contains drills and games that encourage the development of accuracy by  
pacing students at a rate which is slightly below their maximum speed. Students who  
complete these exercises should be able to build their typing speed up to a minimum of  
twenty words per minute and reduce their error rate to no more than three uncorrected  
errors per minute.

In summary, the content of these two packages is appropriate for students in the  
Grade 4-9 range. With some teacher input into the practice paragraphs, either package  
could be easily adapted to accommodate the needs of a Grade 10 and above. The  
sequential development of keyboarding skills is appropriate as they are presented. But,  
in the event that there are special learner needs present in a group, the program is  
flexible enough to be easily adapted to serve the needs of special learners. While not  
designed to be a totally stand alone package, instructions to the student are well  
explained, and consistent. No programming errors have been detected thus far. Feed-

back is immediate, positive and relevant to the user. The documentation is available,  
clearly-written and adequate for the purposes for which it was intended. Reference lists  
are supplied for those teachers who wish to pursue the topic further.