Braillewriting Dot by Dot

Eleanor Pester
Research Scientist

Fred Otto
Research Assistant

Tom Poppe
Tangible Materials Designer

In One Volume



American Printing House for the Blind
Louisville, Kentucky 40206-0085

Acknowledgements

The authors wish to acknowledge the contribution of Mrs. Betty Wommack, who willingly shared her ideas and experience with us and upon whose work this program is based.

Reviewers and Field Testers

Ardis Barnett
IN Family and Social Services Administration at Bosma Rehabilitation Center in Indianapolis

Pamela Etheredge
Vermont Association for the Blind and Visually Impaired

Sr. M. Margaret Fleming and Kay Solliday
St. Lucy Day School in Upper Darby, PA

Edna L. Hoyt
IN Family and Social Services Administration in Muncie

Ted Lennox
Carr School in Lincoln Park, MI

Susan Mangis
San Juan Unified School District in CA

Christine Pitzer
IN Family and Social Services Administration in Clarksville

Deanna Scoggins
Kentucky School for the Blind

Judith K. Smith
IN Family and Social Services Administration in Evansville

Jill Thomas
IN Family and Social Services Administration in Lafayette

Copyright © 1995 by American Printing House for the Blind. All rights reserved.
Printed in the United States of America.

TABLE OF CONTENTS

Introduction 5

Braillewriter 9
- Lesson 1 11
- Lesson 2 13
- Lesson 3 17
- Lesson 4 19
- Lesson 5 21
- Lesson 6 23
- Lesson 7 25
- Lesson 8 27
- Lesson 9 29
- Lesson 10 31

Slate and Stylus 33
- Lesson 1 35
- Lesson 2 37
- Lesson 3 41
- Lesson 4 45
- Lesson 5 47
- Lesson 6 49
- Lesson 7 51
- Lesson 8 53
- Lesson 9 55
- Lesson 10 57

Beyond the Basics 59
- Building on What You Know 61
- Applying What You Know 63
- Knowing the Tools 67

Appendix: Activities for Hand and Arm Strengthening 73

Introduction

Braille enables a blind person to write as well as read. A number of programs teach individuals to read braille; this program provides instruction in writing braille with either a braillewriter or a slate and stylus.

Target Population

This program was designed for use with several different types of students:

1. adventitiously blind children who are now learning to use braille

2. adventitiously blind adults who are now learning to use braille

3. congenitally blind children who are learning to read using braille

4. congenitally blind adults who have not learned to write with a slate and stylus and/or a braillewriter

Prerequisites

It is assumed that students using this program will be able

1. to identify the letters of the alphabet tactually.

Braillewriting is easier to learn if you know what you are trying to write and can tell whether or not you have written it correctly.

2. to decode and spell most words on approximately a 4th grade level.

Although students do not need to be able to read braille with contractions and teachers may give help with spelling, some knowledge of spelling, reading, and decoding will certainly make the program more meaningful and enjoyable for both the student and the teacher.

3. to physically manipulate a braillewriter and/or a slate and stylus.

At first some students may lack the hand and finger strength and stamina required for braillewriting, but with time these can be developed. Some other students may have additional handicapping conditions which make braillewriting physically impossible. Before giving up on braillewriting, be sure that the student knows about specially adapted braillewriters for one-handed use, those with extended keys, and those which use electricity to make braillewriting easier.

Vocabulary

Students are only expected to braille words in this program which are spelled the same way in print (Grade 1 Braille) and in Grade 2 Braille. This enables both students who know braille contractions and those who know only the braille alphabet and print spellings to use this program without brailling anything incorrectly. Numbers and a few punctuation marks are also introduced. Teachers may want to supplement these lessons with the addition of other braille units which seem appropriate for each particular student.

The Importance of Writing Two Ways

Braille users should learn how to write both with a slate and stylus and with a braillewriter. One supplements the other. Specific tasks and circumstances will help determine which method is more appropriate to use. A slate and stylus can easily be carried, are relatively inexpensive to own, and are relatively quiet in operation. The braillewriter, on the other

hand, is faster to use and would probably be the method of choice for longer writing tasks. Both methods of writing braille are presented in this program. Lessons are based on use of the Perkins Brailler and on a standard 28 cell, 4 line pocket slate.

Which Comes First?

Several factors will have to be considered in deciding on the order in which to introduce the slate and stylus and the braillewriter. The student will need to have good finger strength to use the braillewriter; good fine motor control and hand strength are required to use the slate and stylus. (Activities for strengthening students' hands and arms for braillewriting are suggested in the Appendix.) Because the braillewriter makes letters faster, some feel it should be taught first so that students can experience early success; others feel that the braillewriter should be introduced only after writing on a slate and stylus has been mastered since the transition to the braillewriter will be relatively easy. The order of introducing the two methods of writing braille is left to the discretion of the teacher.

Program Materials

Materials included in this program consist of the following:

Teacher's Manual including
- 10 lessons on the Braillewriter
- 10 lessons on the Slate and Stylus
- 3 lessons Beyond the Basics
- Appendix of hand strengthening suggestions

Cassette with dictation exercises from
- Teacher's Manual
- Alphabet Etc. sheet
- Swing Cell
- Peg Slate
- Big Cell

Overview of Program

Whichever method is chosen for beginning braillewriting, instruction begins by relating the reading of braille to the writing of braille using the chosen method. Special devices have been developed to demonstrate this relationship. For the braillewriter, the device is the Swing Cell, and for the slate and stylus, the Peg Slate.

Next, students learn to load paper into their braillewriters or slates and to use their hands and fingers correctly to produce braille dots. The Big Cell magnifies the slate cell, allowing students to explore the dot positions with their fingers before producing dots with a stylus. Students are introduced to the parts and workings of the braillewriter and the slate.

At this point, most students will probably understand the process of writing braille on a braillewriter or with a slate and stylus. However, a great deal of practice is required for students to become proficient braillewriters. Therefore, to help students begin to practice in a systematic way, each dot is introduced, starting with the dots which are easiest to make. The dots are then used to make letters and common punctuation marks. As each new braille configuration is introduced, students are asked to find it on the Alphabet Etc. sheet, to identify the dots in it, and finally to write it. This process should help students braille configurations they meet which have not been formally introduced. After students have learned to make letters, the letters are practiced in words, phrases, and other activities.

Instructional Setting

Whether the student is writing on a braillewriter or with a slate and stylus, the beginner will find that it is easier to sit at a table in a chair of a comfortable height to work. This no-nonsense position will help the student concentrate and develop good habits when

brailling. Later, the student will probably discover that brailling can be done in other positions, especially if a slate and stylus is being used. In the beginning, however, good posture should be emphasized.

Lesson Presentation

Lessons vary in length according to the new material being presented and the old material reviewed. Teachers should determine the length of each session based on the needs and the attention span of the student rather than on the amount of material presented in the lesson in the book. Teachers should also consider the student's degree of fine motor control, muscular strength, and stamina. Frequent short lessons may be more effective than long lessons spaced farther apart.

Knowledge of your students will help you determine how and when to present lessons. Some students may need several days to master a part of a lesson, while others may do several lessons in one session. For example, the lesson on loading the braillewriter or slate may take several days of practice and may require teacher assistance in the beginning, but brailling the first few letters may be easy. Feel free to make additions or omissions to the lessons to meet each individual student's needs. Before omitting lesson parts, try to determine that the ones you are considering omitting are practice or review exercises rather than introductory or instructional parts.

Using the Recorded Instructions

The cassette tape included with this program gives instructions for many of the longer dictation exercises. You may want to use it when your instructional time with students is limited and you want to leave some work for them to do on their own. The tape also allows students to work at their own pace.

For the purpose of finding a particular exercise on the tape, each exercise is marked with a letter indicating whether it belongs to the Braillewriter or Slate and Stylus section (B or S) and a number indicating the lesson. Where there are several dictation exercises within the same lesson, a lowercase letter (a, b, c, etc.) is added after the lesson number. Thus, B5b indicates Braillewriter lesson 5, second dictation exercise.

Beyond the Basics

After students have completed the first 10 lessons, they will be able to braille the letters of the alphabet, some common punctuation marks, words, numbers, and even phrases and sentences either on a braillewriter or with a slate and stylus, but they will not have mastered braillewriting. Furthermore, if they do not continue to practice, the braillewriting skills they have acquired will be lost. Therefore, the last three lessons in this program take students "Beyond the Basics."

"Beyond the Basics: Building on What You Know" gives some ideas for introducing students to Grade 2 Braille contractions, some general rules for writing and formatting braille, and some helpful resource materials.

"Beyond the Basics: Applying What You Know" gives some practical ideas for using braillewriting to help students in their daily lives as well as some tips about materials and devices for doing these tasks.

"Beyond the Basics: Knowing the Tools" provides information about devices used for writing braille and where they can be purchased.

"Beyond the Basics" are meant to be starting points or references to return to rather than all-inclusive lessons. They can be interspersed with each other or done in any order. They can even be supplemented or omitted, in part or as a whole, depending on what seems to be the most appropriate way for a particular stu-

dent to continue with braillewriting. Parts of "Beyond the Basics: Knowing the Tools" might be used to introduce students to a second method of braillewriting or to end braillewriting instruction.

Follow-up

Although knowledge of the alphabet in braille is both the prerequisite for beginning this program, and basically, the scope of the braille material presented in the program, students will need to continue to apply what they have learned as their knowledge of braille expands. It is essential for successful braille writers to know the braille code, dot positions and dot numbers of not only the letters, but contractions, shortforms, and other braille symbols as well. Students will need to work on identifying and memorizing dot numbers of letters and other braille units for quick recall. Additional practice will also help students develop skill and make braillewriting a useful tool, not just until they complete this program, but throughout their lives.

Braillewriter

Objectives To discuss uses of the braillewriter; to introduce the Swing Cell and demonstrate the relationship of reading and writing on it; to teach or review the numbering of dot positions for reading; to introduce the numbering of dot positions on the braillewriter

Materials needed Swing Cell

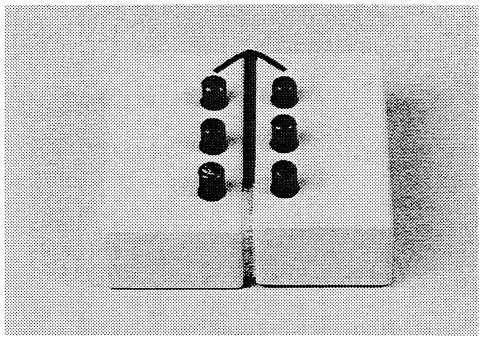
Procedure

Involve students in a discussion about their use of braille. Tell them they will soon learn to write braille on a braillewriter. Point out that the braillewriter is similar to a typewriter. It is a very useful tool for writing large amounts of braille and produces braille rather quickly since all of the dots in a shape are made at one time. Explain that in writing on the braillewriter they will use what they have already learned about reading braille.

Give students Swing Cells and time to examine them. Explain that this device can be used to introduce writing on a braillewriter since the pegs on a Swing Cell are the same size and distance apart as the keys on a braillewriter.

Substitutions for the Swing Cell If a Swing Cell is not available, you may use other devices such as cupcake pans and tennis balls to illustrate dot positions for braillewriting.

After students have had time to examine the Swing Cell, center attention on the peg order in reading position. Help students recall that the pegs from top to bottom on the left are numbered 1, 2, and 3 and on the right, 4, 5, and 6. Ask students to name the two dots on top. (dots 1 and 4)



Left and right Some students—particularly those with mixed dominance—may have difficulty with the words *left* and *right*. Stress dot numbers with these students as you physically show them the pegs.

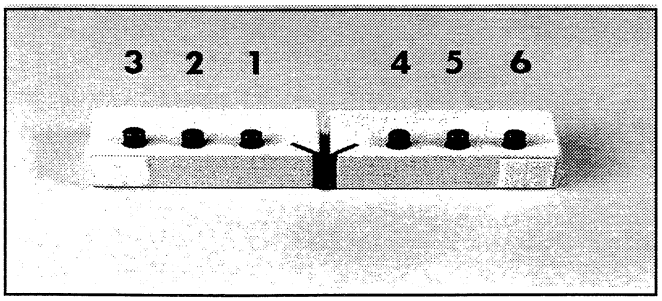
Follow the same procedure for a while in discussing dot numbers on the Swing Cell and on the braillewriter. In a short time, the positions of the dots should become fairly automatic.

Here is a drill to help students learn or review the dot numbers in the reading position. With a Swing Cell in reading position and all of the pegs removed, give each student a peg to insert to show the following as they are called:

dot 4	dot 5
dot 1	dot 2
dot 3	dot 6
dot 5	dot 1
dot 6	dot 3
dot 2	dot 4

Vary and repeat the drill as needed.

When you are satisfied that the students understand how the dots are numbered for reading, show the students how in writing position, the dots are numbered from the middle to the left and from the middle to the right. Explain that this is the same as the numbers for the keys on a braillewriter. Ask students to tell where dots 1 and 4 are now. (in the middle) Point out that they have not moved.



Here is a drill to help students learn the numbers in the writing position. With a Swing Cell in writing position and all of the pegs in place, have the students find keys for the following dots:

dot 1	dot 3
dot 2	dot 4
dot 3	dot 1
dot 4	dot 6
dot 5	dot 2
dot 6	dot 5

Repeat similar drills until students can identify the dot numbers easily. The drills can be varied by having the students take turns rolling a die to designate each number to be found. Or, tennis balls can be used in cupcake pans, people can sit in chairs, etc. to represent different dot numbers.

Fingering This introductory lesson concentrates on dot numbers. Correct fingering will be presented later as students begin to use the braillewriter to make specific dots and letters.

Objectives	To review dot numbers for reading; to review dot numbers for writing on a braillewriter; to introduce the braillewriter and a number of its parts; to teach loading and unloading a braillewriter with paper and line spacing
Materials needed	Swing Cell, braillewriter, braille paper

Procedure

After allowing the students a few minutes to work with the Swing Cell and think about what they learned concerning the numbering of dots on it, ask them to do the following:

1. Name the dots from top to bottom on the left in reading position. (dots 1, 2, 3)
2. Name the dots from top to bottom on the right in reading position. (dots 4, 5, 6)
3. Name the two bottom dots in reading position. (dots 3 and 6)
4. Name the two top dots in reading position. (dots 1 and 4)
5. Name the dots on the left in writing position, starting in the center. (dots 1, 2, 3)
6. Name the dots on the right in writing position, starting in the center. (dots 4, 5, 6)
7. Name the two dots nearest the center in writing position. (dots 1 and 4)
8. Name the middle dots on each side in both reading and writing position. (dots 2 and 5)

If students have difficulty answering these questions, give them more practice on dot numbers with the Swing Cell.

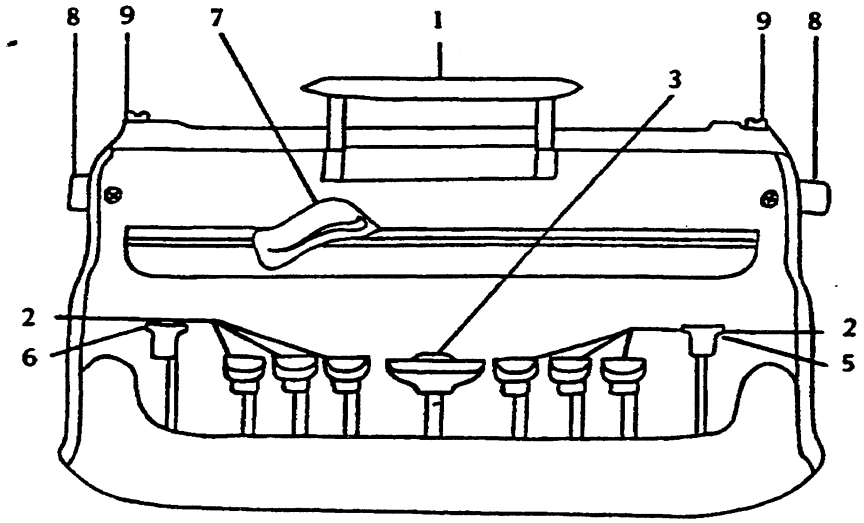
Next, give students braillewriters to examine.

Braillewriter Lessons in this program are based on the Perkins Brailler. If you are using some other braille device with a braillewriter-style keyboard, make adaptations in the lessons as necessary.

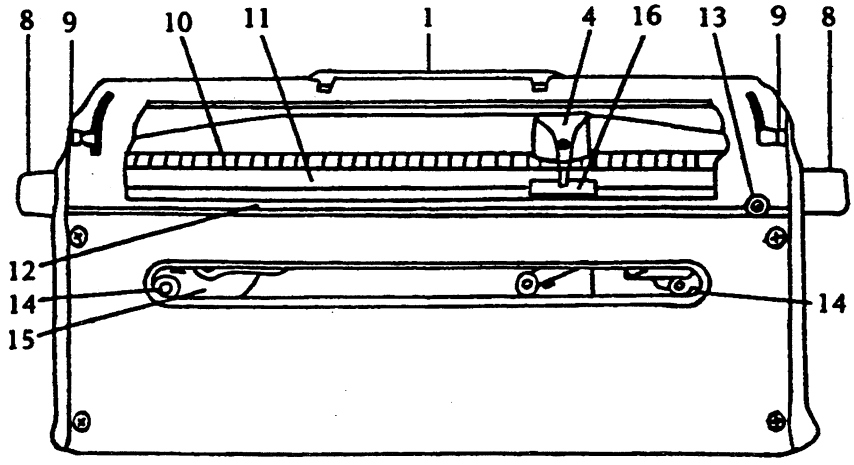
Special needs A number of braillewriters and accessories are made for students with special needs. Some you might want to become familiar with are the electric brailler, a brailler which can be operated with only one hand, and extension keys.

Point out the *handle* at the top of the braillewriter which can be pulled up to carry the machine and then folded down out of the way when the braillewriter is in use.

Parts of a Braillewriter



FRONT VIEW



BACK VIEW

1. handle
2. keys
3. spacing key
4. embossing head
5. back-spacing key
6. line spacing key
7. embossing head lever
8. paper feed knobs
9. paper release levers
10. grooved roller
11. feed roller
12. paper support bar
13. left paper stop
14. margin stops
15. warning bell
16. stripper plate

Terms Although students are encouraged to use the correct names for braillewriter parts, mastery of the terms is not required for this program.

Next help students locate the *keys* which are used to make the dots. Relate the keys on the braillewriter to the pegs in the Swing Cell in writing position.

Then concentrate on the keys of the keyboard. Have students put their index fingers on the keys for dots 1 and 4, their middle fingers on the keys for dots 2 and 5, and their ring fingers on the keys for dots 3 and 6. Then ask students to name the dot that will be made by the following:

1. Your right index finger. (dot 4)
2. Your left middle finger. (dot 2)
3. Your right middle finger. (dot 5)
4. Your right ring finger. (dot 6)
5. Your left ring finger. (dot 3)
6. Your left index finger. (dot 1)

Give students additional practice as needed.

Tell students that before they can make braille dots with the braillewriter, they will need to learn to put paper in it. Have students put braille paper where it will be handy when they need it.

Braille paper Braille paper is available in several different sizes and weights. Beginners may find it easier to use smaller, lighter weight paper at first.

Help the students locate the *paper feed knobs* on each side of the braillewriter and turn these knobs away from them as far as they will go.

Then have the students find the *paper release levers* at the top on each side of the braillewriter. Explain that when these levers are pushed back they hold the paper in the braillewriter, and when they are pulled toward you they release the paper and allow you to move it. In order to put paper in the machine, be sure these levers are pulled toward you.

Now help students locate the following parts on the top of the braillewriter:

1. *paper support bar*—a flat, narrow area at the back
2. *grooved roller*—a metal roller toward the front
3. *feed roller*—a rubber roller directly below the grooved roller
4. *embossing head* and *stripper plate* under it—the parts which move along and make the dots

Next, instruct the students to lay the paper on the paper support bar and slide it between the embossing head and stripper plate to the left as far as it will go. Then push it in until it just touches the rollers. Now have students hold the paper in place with one hand while they push either paper release lever back with the other hand. Finally, have the students use both hands to roll the paper in as far as it will go with the paper feeding knobs.

Now, before students are ready to begin writing, help them find the *embossing head lever* below the handle on the front of the braillewriter and use it to move the embossing head to the left. Then help them find the *line spacing key* below the embossing head lever on the left and have them push it once. They are now ready to begin brailling.

To practice unloading the braillewriter, have students use the paper feed knobs to roll the paper out and the paper release levers to release it.

Guide students through the steps for loading and unloading the braillewriter once more. Then let them load the braillewriter independently, giving help only if necessary.

At this point allow students some time to experiment or "scribble" (make random dots) on the paper and to experiment with the keys on the braillewriter before having them unload the braillewriter a final time.

Loading and unloading the braillewriter

Some students may have already mastered these processes; others may require help for several more lessons. These are important skills.

Objectives To review loading and unloading the braillewriter, line spacing, and dot positions; to introduce correct fingering on the braillewriter; to teach dots 1 and 4 and the letters *a* and *c*; to introduce proofreading

Materials needed Braillewriter, braille paper, Alphabet Etc. sheet

Procedure

Ask students to load their braillewriters. Give help only as needed.

Next have students tell you the numbers for the keys on the braillewriter. (From left to right they are 3, 2, 1 and 4, 5, 6.) If students seem unsure, use the Swing Cell to review the dot numbers in reading position (from top to bottom and left to right 1, 2, 3, and 4, 5, 6) and in writing position (from left to right 3, 2, 1, and 4, 5, 6). Then have the students relate the writing position on the Swing Cell to the keys on the braillewriter and tell you once more the numbers for the keys on the braillewriter. (From left to right they are 3, 2, 1 and 4, 5, 6)

Now have students put their fingers on the keys on the braillewriter. Explain to students that their fingers should be on the following keys:

Index fingers on keys 1 and 4
Middle fingers on keys 2 and 5
Ring fingers on keys 3 and 6

Tell students that their thumbs can rest on the spring key in the middle. (This is a good reference point for students to use. They will learn how to use it in the next lesson.) Tell students it is important to use the correct fingers on the keys because this will help them write faster and more accurately.

At this point, you should demonstrate correct fingering and braille a full cell on each student's paper to use as a reference.

With their fingers in position over the keys, ask students to press down hard on key 1 with their left index fingers.

Finger strength Use this exercise to analyze students' finger strength. Most students can and will develop sufficient strength to use a standard braillewriter. For students who need extra work to strengthen their fingers, see the Appendix for suggestions. For students who are physically unable to develop enough strength to press down the keys on the Perkins Brailler, an electric model is available or brailling can be done using a slate and stylus.

Next help students locate the embossing head and examine the dot to the left of it which they just made. Continue having students press the following keys using correct fingering and then examining the results:

key 4 key 2
key 3 key 5
key 6 all six keys at once

Now have students put their fingers back in position over the keys and complete the line with dot 1's keeping an even pace. Note that students will hear the warning bell when the line has been completed. When they hear the bell, have them push the line spacing key to the

left of the key for dot 3, then move the embossing head lever to the left, so that they can examine the line of dot 1's they just wrote.

Line Spacing If students are beginning braille readers, you may wish to have them push the line spacing key twice for ease of reading. If students are experienced braille readers, pushing the key once should be sufficient.

Now have students make a line of dot 4's following the procedure used for dot 1.

Next have students use the Alphabet Etc. sheet to identify the dot in the letter *a*. (dot 1)

Use of Alphabet Reference Even though students may know how to read the letters, they may not know the dots needed to make them. This program uses the Alphabet Etc. sheet to provide practice in identifying the dots in various braille configurations. If the students you are working with can already identify the dots in various braille configurations, adapt the lessons accordingly.

Have students make a line of *a*'s.

Letter signs Letter signs are not introduced in this program and when students are asked to braille letters they are not expected to use them.

Next, have students use the Alphabet Etc. sheet to identify the dots needed to write the letter *c* (dots 1 and 4) and make a line of *c*'s. Be sure students understand that both key 1 and key 4 must be pressed down at the same time to make the letter *c*.

Have students proofread their work. As students braille, they should strive for the following:

1. dot height consistency
2. accuracy in writing
3. correct fingering
4. a steady rhythm or pace

To help students develop speed and accuracy, have them make a line of *a c a c* . . . and then proofread their own work.

Finally have students take their papers out of their braillewriters. Give help only as needed.

Objectives	To teach use of the margin stops; to review the letters *a* and *c* and line spacing; to teach dot 2; to introduce commas and the letters *b*, *i*, and *f*; to teach spacing between letters; to have students write words with the letters learned
Materials needed	Braillewriter, braille paper, Alphabet Etc. sheet

Procedure

After students have loaded their braillewriters, help them locate the two margin stops in the slot on the back of the braillewriter. Point out that each margin stop has a knob and a tab. Explain that by pinching the knob and the tab together, the margin stops can be moved to the left or the right and that the embossing head moves between them. Have students change the margin stop on the right and then use the embossing head lever to move the embossing head to the right as far as it will go. Then have them examine where the embossing head is over their paper.

Follow a similar procedure for moving the margin stop on the left and checking the position of the embossing head. Point out that the margin stops can be used to make columns, charts, etc. Always have the students move the embossing head to the right before setting the left margin stop, and move it back to the left and space one time with the spacing key after setting the left margin. Allow a little time for experimentation with the margin stops. If necessary, point out that the warning bell rings seven spaces before the embossing head reaches the margin stop on the right. Ask if anyone knows why this is so. (This allows the braillist to finish or hyphenate the word being brailled before line spacing and continuing on the next line.)

Next have students set the margin stops so they have as much room as possible to braille on their papers. After setting the left margin stop as far left as possible, have students space across the line until they can put one finger to the right of the embossing head with the right edge of the paper just beyond their finger. With their left hands on the embossing head, have them use their right hands to move the right margin stop until it hits the embossing head and then set it at that point. Explain that this is how the margin stops should be set most of the time.

Now have students return the embossing head to the beginning of the line for writing. You may wish to have students repeat this procedure with several different sizes of braille paper before continuing on. Be sure students notice the relationship between the embossing head and the margin stops. Next have students write a line of the letter *a* and a line of the letter *c*, using correct fingering and proofreading the line when it is complete.

Have students make a line of dot 2's, using their middle fingers and proofread the line when it is complete.

Now have students use the Alphabet Etc. sheet to identify the dots in the letter *b* (dots 1 and 2) and then make a line of *b*'s. If necessary, remind students to proofread their work.

Next have students identify the dots in the letter *i* (dots 2 and 4) and make a line of *i*'s.

Finally, have students identify the dots in the letter *f* (dots 1, 2, and 4) and make a line of *f*'s.

Help students locate the spacing key in the middle of the keyboard. Comment that, with their fingers in position over the keys, they can push the spacing key with either thumb. Have students practice pushing the spacing key with each thumb. Now have the students braille as you dictate the following slowly:

a space
b space
c space
f space
i line space

Give help as needed. The finished line should look like this:

a b c f i

Now have students look at the first braille unit written after a full cell in the middle section of the Alphabet Etc. sheet. Ask if anyone knows what it is. (a dot 2 or a comma) Then explain that a *comma* is written by brailling a dot 2 right after a letter or word and then spacing. Have students write the same letters you dictated previously, separating them this time with commas as well as spaces. You may have them read the line they just wrote or you may dictate the letters again. The finished line should look like this:

a, b, c, f, i

Finally dictate these words for the students to write and separate with commas:

Taped exercises Dictation exercises are also available on tape to allow teachers the option of having students work more independently and to practice their braillewriting when the teacher is unavailable.

Numbered exercises Students are not asked to number their lines in dictation exercises at this point, since the necessary dots have not been introduced. Later, when the dots have all been taught, be sure students include the numbers in these exercises.

(Exercise B4 on tape)

1. *cab* Did you take a cab to work? Write *cab*.
2. *fib* A fib is a kind of lie. Write *fib*.
3. *if* I will call if I can go. Write *if*.
4. *bib* Put on the baby's bib. Write *bib*.

The finished line should look like this:

cab, fib, if, bib

Have students proofread their work and rewrite any words that need corrections before removing their papers from their braillewriters.

Spelling The object of the dictation exercises in this program is not to teach spelling, but rather to give paced practice in braillewriting. Whether you use the tape recorded instructions for dictation exercises or give them yourself, simply ask students to do their best with spelling, giving help where appropriate.

Lesson 5

Braillewriter

Objectives

To introduce the left paper stop; to review the margin stops; to review the letters *a*, *b*, *c*, *f*, and *i* and the comma; to teach dot 5 and the letters *e*, *d*, *h*, *g*, and *j*; to have students write words and phrases with the letters learned

Materials needed

Braillewriter, braille paper, Alphabet Etc. sheet

Procedure

Before students load their braillewriters, point out the grooved round knob below the paper release lever on the left. Tell students that this is called the *left paper stop*. Direct students to loosen the left paper stop a little by turning it to the right. Then have them slide it to the right and tighten it before they put their paper in. Have them braille the letter *c* five times and take the paper out. Have the students examine where the *c*'s start on the left, noting the narrow left margin. Have students follow a similar procedure moving the left paper stop to the left and noting the wide left margin. Direct the students to set the left paper stop appropriately for their paper. Then have the students review what they have learned by checking their margin stops and writing the following letters, spaces, and commas as they are dictated:

a c b i f, f a i b c, i c a b f, b f i
i a c b f, c f a i b, b i a f c, c f b

Now ask students to make a line of dot 5's using their right middle finger and spacing after each one.

Next have students look at the letter *e* on the Alphabet Etc. sheet and identify the dots in it (dots 1 and 5). As students make a line of *e*'s separated with spaces, encourage them to try to maintain a steady pace.

Use a similar procedure for introducing these letters:

the letter d (dots 1, 4, and 5)
the letter h (dots 1, 2, and 5)
the letter g (dots 1, 2, 4 and 5)
the letter j (dots 2, 4, and 5)

When students have completed a line of each of these letters, dictate these words for them to write:

(Exercise B5a on tape)

1. *he* I know that he will help. Write *he*.
2. *egg* The egg was not cooked. Write *egg*.
3. *idea* I have an idea. Write *idea*.
4. *jade* Most jade is green. Write *jade*.
5. *job* You did a good job today. Write *job*.
6. *jib* The triangular sail on the front of a boat is called a jib. Write *jib*.
7. *badge* A new badge was sewn on her sash. Write *badge*.

Have students proofread their papers and rewrite any words they had difficulty with.

For additional practice, have students write the following phrases as they are dictated. For additional practice using the margin stops, after brailling the first five phrases, have students space over 15 spaces, set the left margin stop, roll the paper back to the first line, and braille the last five phrases in a second column. Give help as necessary.

(Exercise B5b on tape)

add dice	a big bag
a bad fad	dice beef
did a jig	a bee cage
a big fee	face dad
ace a bid	hide a fig

Be sure students proofread their work and rewrite when necessary.

Writing in columns For additional practice using the margin stops and writing in columns, you may wish to have students write lists of dictated words in more than one column as you continue with the lessons.

Lesson 6

Braillewriter

Objectives To review the letters *a* through *j* and the comma; to teach dot 3 and the letters *l*, *k*, *m*, *o*, and *n* and the apostrophe; to have students write words and phrases with the letters learned, and correct errors by backspacing and adding dots

Materials needed Braillewriter, braille paper, Alphabet Etc. sheet

Procedure

Have students load their braillewriters, checking and resetting the left paper stop and the margin stops as needed; review the letters they have learned by having students write the first ten letters of the alphabet, *a* through *j*, two times separating the groups of letters with a comma and a space. The line should look like this:

a b c d e f g h i j, a b c d e f g h i j

Continue the review by dictating the following words:

(Exercise B6a on tape)

1. *gag* Eat slowly so you won't gag on your food. Write *gag*.
2. *jab* The boxer threw a left jab. Write *jab*.
3. *hid* The snake hid in the grass. Write *hid*.
4. *face* When I cleaned the attic, I got dirt on my face. Write *face*.
5. *decide* I can't decide which flavor of ice cream I like best. Write *decide*.
6. *beige* The new carpet looks beige. Write *beige*.

If students are having difficulty writing any letters or combinations of letters or the comma, have them write those letters again several times before going on.

Tell students that the new dot for the day is dot 3. Have students look at the second braille unit in the middle of the Alphabet Etc. sheet and see if anyone can identify it. (apostrophe) Explain that in later lessons they will need to write apostrophes in possessives and contractions. Then ask students which finger should be used to make dot 3. (the left ring finger) Have students make a line of dot 3's using the correct fingering and maintaining a steady pace.

When they have completed the line, point out that this is one of their weaker fingers so they may find making some of the new letters today a little more challenging. Tell them, however, that they should find the first letter easy to make. Identify the new letter as the letter *l*. Have students find the letter *l* on the Alphabet Etc. sheet and name the dots in it. (dots 1, 2, and 3) Mention that this letter is easy to make since all the fingers on the left push the keys to make it. Then have students make a line of *l*'s using the correct fingering and maintaining a steady pace.

Follow a similar procedure for introducing the letter *k*. (dots 1 and 3) Then continue with the following noting that both hands will be needed to braille these letters:

the letter m (dots 1, 3, and 4)
the letter o (dots 1, 3, and 5)
the letter n (dots 1, 3, 4, and 5)

Finger strengthening exercises Students who have great difficulty using their fingers independently to make these letters may benefit from doing finger strengthening exercises. See Appendix A for suggestions.

Next dictate the following words which contain the new letters for the students to write:

(Exercise B6b on tape)

1. *mole* We are trying to trap the mole in our front yard. Write *mole*.
2. *fond* I am very fond of roses. Write *fond*.
3. *jell* Cook the fruit and sugar together until they begin to jell. Write *jell*.
4. *nomad* Some people call me a nomad because I'm always on the go. Write *nomad*.
5. *koala* The koala came from Australia. Write *koala*.
6. *flake* Was there a flake of snow on Sam's coat? Write *flake*.
7. *fickle* Many things are blamed on the fickle finger of fate. Write *fickle*.
8. *manhole* Don't go near the open manhole! Write *manhole*.
9. *back* Many people suffer with pain in the back. Write *back*.

Have students proofread their work and rewrite as necessary.

Now here are some phrases you may wish to dictate and have the students braille for additional practice with the new letters:

(Exercise B6c on tape)

1. fill a bill
2. nice mice
3. banana cake
4. a meek monk
5. a nice noodle
6. kick a ball
7. cold milk
8. cookbook magic
9. make a big loom
10. a knock knock joke

Have phrases proofread and corrected.

If students have not yet discovered the backspacing key, help them locate it to the right of the key for dot 6. Point out that the best finger to use for the backspacing key is the right little finger. Give students time to experiment with backspacing before going on.

Explain to students that backspacing can be used to help them correct errors. To see how this works, have students braille the letter *k* and check it. Then tell them that you really wanted the letter *l*. Ask them what they could do to fix this mistake (backspace until the embossing head is already over the letter to be corrected and add dot 2 to the *k*). If necessary, let students consult their Alphabet Etc. sheets to see this relationship. Point out that often adding a dot to a letter on a braillewriter flattens out the other dots in the letter. To avoid this, it is a good idea to rebraille the whole letter you want, rather than just the additional dot, and then be sure to proofread the corrected work.

Have students follow a similar procedure to make these changes:

(Exercise B6d on tape)

1. Write the letter m.
   Change it to the letter n.
2. Write the letter c.
   Change it to the letter m.
3. Write the letter b.
   Change it to the letter l.
4. Write the letter d.
   Change it to the letter n.
5. Write the letter o.
   Change it to the letter n.
6. Write the letter a.
   Change it to the letter b.
7. Write the letter e.
   Change it to the letter o.
8. Write the letter b.
   Change it to the letter h.
9. Write the letter i.
   Change it to the letter j.

Encourage students to check their changes as they go.

Objectives To review the letters *a* through *o*; to introduce the capital, period, and the letters *p*, *q*, *s*, and *t*; to teach dot 6; to have students write words and sentences with the letters learned; to introduce erasing dots to correct errors

Materials needed Braillewriter, braille paper, Alphabet Etc. sheet, braille eraser

Procedure

Begin by asking students which finger is used to braille dot 3. (left ring finger) Have students braille a row of dot 3's separated with spaces. Then dictate the following, including punctuation and spacing, for students to braille on the next line:

n, o, k, d, g, l, h, m, e, j

As always, try to dictate at a slow but steady pace as students braille.

Next have students write the following words:

(Exercise B7a on tape)

1. *hem* Sue will hem the dress. Write *hem*.
2. *joke* Larry told a funny joke. Write *joke*.
3. *nod* If your answer is yes, nod your head. Write *nod*.
4. *golf* Do you know how to play golf? Write *golf*.
5. *film* We bought film for the camera. Write *film*.
6. *knock* I heard a knock at the door. Write *knock*.
7. *bond* Did you say to sell the stock or the bond? Write *bond*.
8. *jog* Let's jog around the park. Write *jog*.
9. *held* The happy couple held hands as they listened to the concert. Write *held*.
10. *gnome* The gnome in the story seemed to have magical powers. Write *gnome*.

When students have completed this review satisfactorily, have them use their Alphabet Etc. sheets to find the first new letter in this lesson, *p*, and identify the dots in it. (dots 1, 2, 3, and 4) Have students demonstrate correct fingering as they make a line of *p*'s. Then follow a similar procedure as you introduce these letters:

the letter q (dots 1, 2, 3, 4, and 5)
the letter r (dots 1, 2, 3, and 5)
the letter s (dots 2, 3, and 4)
the letter t (dots 2, 3, 4, and 5)

Next have students write the following 2 and 3 letter combinations which contain these new letters as you dictate them:

(Exercise B7b on tape)

1. *hq* In the military hq is used for headquaters. Write *hq*.
2. *pi* In math, pi equals 3.14. Write *pi*.
3. *rb* In football, an rb is a running back. Write *rb*.
4. *sp* In proofreading, sp indicates a spelling error. Write *sp*.
5. *qb* In football, the gb is the quarterback. Write *qb*.
6. *rps* In mechanics, rps means revolutions per second. Write *rps*.
7. *rt* In a set of directions, right is indicated with rt. Write *rt*.
8. *tbsp* In a recipe, tbsp means tablespoon. Write *tbsp*.
9. *eta* On a schedule, eta stands for estimated time of arrival. Write *eta*.
10. *qt* On a bottle, qt stands for quart. Write *qt*.

Have students proofread the combinations as you read them once more. Students should be encouraged to backspace and fix any errors they find and practice any letters they find to be difficult.

To introduce dot 6, the last dot to be introduced, ask students which finger should be used to make dot 6. (the right ring finger) Have students make a row of dot 6's using the correct fingering and keeping a steady pace. Ask if anyone knows what a dot 6 means before a letter. (that letter is a capital) Have students choose any 5 letters and braille them as capitals.

Now have students find the period on the Alphabet Etc. sheet (fourth braille unit after a full cell in the middle section) and identify the dots in it. (dots 2, 5, and 6) Have them make a full cell with a period after it on their papers. Next have the students write the following abbreviations, including capitals and periods, as you dictate them:

Mrs.	Feb.
Tues.	Mon.
Sept.	Col.
Dr.	Jan.
Sat.	Mts.

Have students proofread and correct errors.

Now dictate the following sentences for the students to braille with capitals, periods, and other punctuation as needed:

(Exercise B7c on tape)
1. Mom bakes apple pie at home.
2. Janet drank hot cocoa, tea, or milk.
3. Brad has orange color pajamas.
4. Dr. Frank's radio program is on.

Explain to students that sometimes errors can be fixed by erasing dots. Give students a braille eraser to examine and explain that the tip of the eraser is placed over an unwanted dot and then pushed down and turned to flatten the dot. Explain that you can also push unwanted dots down with your finger.

Now have students braille six *p*'s. Then have them push the line spacer so that the paper is resting on the paper support bar of the braillewriter or, if the paper is already out of the braillewriter, place it on a hard, flat surface. Then have them erase dot 1 in the first *p* with the eraser and then in the second *p* with their finger. Be sure they proofread their work and if necessary repeat the process. Follow a similar procedure for erasing dot 2 in the next two *p*'s and dot 3 in the last two. The line should now read s s m m f f.

Now have the students put the paper back in the braillewriter in brailling position and write the letters *p*, *q*, *r*, *s*, and *t* and proofread their work. Then, using whichever method the students prefer, have them erase dots to make the following:

(Exercise B7d on tape)
1. Change the p to f.
2. Change the q to d.
3. Change the r to h.
4. Change the s to i.
5. Change the t to s.

Be sure students proofread their work.

Objectives

To review the letters, *a* through *t*; to introduce the letters *v*, *w*, *x*, *u*, *y*, and *z*; to introduce the question mark; to have students write words and sentences with the letters and punctuation marks learned; to review adding and erasing dots to correct errors; to explain more about spacing and making columns

Materials needed

Braillewriter, braille paper, Alphabet Etc. sheet, braille eraser

Procedure

To review the letters learned, have students braille the second ten letters of the alphabet, *k* through *t*, two times separating the groups of letters with a comma and a space. The line should look like this: klmnopqrst, klmnopqrst

Have students proofread and correct any errors.

Next dictate the following sentences which also review these letters:

(Exercise B8a on tape)
1. Joe makes horses trot.
2. Pick a moose or an elk for a mascot.
3. A man's home is a man's palace or pad.

Have students practice any letters you feel they need to before moving on.

Now have the students find the letter *v* on the Alphabet Etc. sheet and identify the dots in it. (dots 1, 2, 3, and 6) Have them make a line of *v*'s using the correct fingering. Continue by introducing the following letters in a similar way:

the letter w (dots 2, 4, 5, and 6)
the letter x (dots 1, 3, 4, and 6)
the letter u (dots 1, 3, and 6)
the letter y (dots 1, 3, 4, 5, and 6)
the letter z (dots 1, 3, 5, and 6)

Have students practice any letters they found difficult.

Now dictate the following words which contain these letters for the students to braille:

(Exercise B8b on tape)
1. *view* The father and his son had different points of view on what to wear. Write *view*.
2. *taxi* Let's take the taxi to the meeting. Write *taxi*.
3. *zippy* The new salad dressing was very zippy. Write *zippy*.
4. *quiz* The teacher told the students that there would be a quiz on Friday. Write *quiz*.
5. *wax* The artificial fruit was made of wax. Write *wax*.
6. *squeeze* Did you ever squeeze an orange? Write *squeeze*.
7. *squirrel* When he heard us, the squirrel ran up the tree. Write *squirrel*.
8. *vacant* We played ball in the vacant lot. Write *vacant*.
9. *yawn* The tired girl began to stretch and yawn. Write *yawn*.
10. *lazy* The lazy man did not get the job done. Write *lazy*.

Have students proofread their work and practice any words or letters causing difficulty.

Now have students find the question mark on the Alphabet Etc. sheet and identify the dots

in it. (dots 2, 3, and 6)

After students have brailled a full cell followed by a question mark, dictate the following sentences for them to write in braille.

(Exercise B8c on tape)
1. Has Jack left home yet?
2. Mom made Phil a new quilt.
3. Does my hair look okay?
4. May I give Max a ride on Val's toy zebra?
5. At a zoo May saw a live box turtle.

For additional practice correcting errors, have students braille the following words:

(Exercise B8d on tape)
1. *bib* The baby wore a bib. Write *bib*.
2. *pod* Peas grow in a pod. Write *pod*.
3. *hail* During the storm, the walk was covered with hail. Write *hail*.
4. *sank* I picked up an apple and sank my teeth into it. Write *sank*.
5. *drab* Without decorations the room looks drab. Write *drab*.
6. *cold* The weather has been rather cold. Write *cold*.

After students have proofread and corrected their work, have them add or erase dots to make the following changes in the words:

(Exercise B8e on tape)
1. Change *bib* to *fib*. Do not tell a fib. Make the word *fib*.
2. Change *pod* to *cod*. My favorite fish is cod. Make the word *cod*.
3. Change *hail* to *rail*. There is a new rail on the porch. Make the word *rail*.
4. Change *sank* to *tank*. We put fuel in the tank. Make the word *tank*.
5. Change *drab* to *crab*. I caught a crab when I went fishing. Make the word *crab*.
6. Change *cold* to *mold*. The salad was made in a mold. Make the word *mold*.

Finally, to build on what students know about backspacing and writing in columns, do the following exercise. Begin by having the students write each of these letters at the beginning of a new line: *r m q k p*. Then write these letters, each on a different line in a second column: *n s l o j*. Note that students will need to line space after each letter and return to the beginning of the line or column. Students can reset the left margin stop to make the second column. Letters should not be followed by commas or spaces.

After students have proofread their work and made any necessary corrections, have them roll the paper back to the first line, the one with the letter *r* on it. Ask students to think of the letter that comes after the letter *r* in the alphabet. (*s*) Have them braille the *s* after the *r* without a space between letters. Students will need to place the embossing head directly after the letter *r* so that no space is between it and the *r* and then braille the letter *s*. Then have students follow a similar procedure to complete work on the list of letters. Give help as necessary. The completed list should read as follows:

rs no
mn st
qr lm
kl op
pq jk

Objectives	To review the alphabet; to introduce the number sign; to have students practice writing numerals, alone and in sentences
Materials needed	Braillewriter, braille paper, Alphabet Etc. sheet, large dice (two for each student)

Procedure

Have students begin by writing the alphabet as quickly as possible, keeping a steady, even pace.

Now have students find the numbers on the bottom section of the Alphabet Etc. sheet and identify the dots in the number sign. (dots 3, 4, 5, and 6) Have students make five number signs, spacing once after each one.

Note that the letters *a* through *j* are written after the number sign to form numerals. Have students write the numerals 0 through 10, using the Alphabet Etc. sheet as needed and spacing after each numeral. If necessary point out that 10 is written number sign *a* no number sign *j*. Give help as needed. Then have students write the numerals counting by tens to 100.

When you feel students understand how to write numerals, have them number their answers and write numerals for the following:

(Exercise B9a on tape)
1. The number of things in a pair (2)
2. The number of things in a dozen (12)
3. The number of children in your family
4. The number of pets you have at home
5. The number for the month of your birth
6. The number for the day of the month on which you were born
7. The number of years in a century (100)
8. This year
9. Your area code
10. Your zip code

Have students proofread their papers and make any necessary corrections.

Next have students braille the following sentences which contain numbers. Be sure they number the sentences.

(Exercise B9b on tape)
1. Jim is 6 feet tall.
2. Date a note June 15, 2004.
3. I am on page 73.
4. Grade 8 is on a field trip.
5. Meg left 9 weeks ago.

Have students proofread their work and correct any errors.

For additional practice with writing two-digit numerals, give each student two dice and have them roll them and write the two numbers shown as a two-digit numeral. For example, if the student rolled a 5 and a 2, he or she could write 52 or 25. Have students write 10 different numerals formed in this way.

If students still seem to need more practice with numbers, exercises from Lesson 9 on Slate and Stylus could be used.

Nemeth Code The numbers we have been practicing in this lesson are used for literary braille, page numbers are good examples of literary braille numbers. If students are not already aware that there is another code for mathematics, this might be a good time to point out that there is, that it is called Nemeth Code, and that numbers should be written in Nemeth Code for arithmetic problems.

Rolling dice To help students locate the dice after rolling them, you might want to have them roll them in a small box such as a shoebox lid. Also, if students need embossed dice, they are available from the American Foundation for the Blind.

Objectives To review all the letters, numbers, dots, punctuation marks, and spacing learned; to review error correction by adding and erasing dots

Materials needed Braillewriter, braille paper, Alphabet Etc. sheet, large dice (one die for each student)

Procedure

Start the review by having students look at their Alphabet Etc. sheets and note the following ideas about how the alphabet is formed in braille:

1. the first row, *a* through *j*, uses only the dots in the upper part of the cell (dots 1, 2, 4, and 5)
2. the second row copies the first, but with dot 3 added to each shape
3. the letters *u*, *v*, *x*, *y*, and *z* in the third row copy the second row, with dot 6 added
4. the *w* breaks the pattern because it was inserted after the original code was invented

Then have students write the alphabet beginning with capital *A*, next lowercase *a*, then space. Have students continue on through the alphabet, changing lines when the warning bell rings and proofreading their work before removing it from the braillewriter. Their finished papers should look something like this:

Aa Bb Cc Dd Ee Ff Gg Hh Ii
Jj Kk Ll Mm Nn Oo Pp Qq Rr
Ss Tt Uu Vv Ww Xx Yy Zz

Have students correct and practice any letters they missed.

Now for practice with dots and spacing, give students dice and have them roll a die and braille the dot for the number shown on the die in a cell. Next have them roll the die again. This time students may do one of the following:

1. space and make the dot for the second number shown in a different cell or
2. backspace and add the dot for the second number shown to the first dot already on the paper.

Have students continue rolling the dice and following a similar procedure until they have made five different letters on their papers.

Next, to review the letters, numbers, capitals, and punctuation marks learned, have pupils braille the following sentences. Be sure students number the sentences on their papers.

(Exercise B10a on tape)
1. Does John want turkey, ham, or beef?
2. Victor walks 6 miles daily.
3. Does Mom drive Dad's truck?
4. Won't Patrick visit Sam at home?
5. George isn't lazy or quiet yet he relaxes.
6. I live at 1028 Elmwood.
7. A blue color is royal, navy, azure, aqua, or sky.
8. Patsy wants a new dress, a new hat, or a new purse.

Finally have students review erasing and adding dots to correct errors. Begin by having them braille these words:

(Exercise B10b on tape)
1. *crank* Please crank the engine. Write *crank*.

2. *way* What way do I go to get to the park? Write *way*.
3. *hid* The boy hid behind a tree. Write *hid*.
4. *fond* I am fond of ice cream. Write *fond*.
5. *rip* I need to mend the rip in my sleeve. Write *rip*.

After students have proofed and corrected their work have them add or erase dots to make the following:

(Exercise B10c on tape)
1. Change *crank* to *drank*. I drank all the milk. Make *drank*.
2. Change *way* to *jay*. I heard the jay bird singing. Make *jay*.
3. Change *hid* to *bid*. What am I bid for this treasure? Make *bid*.
4. Change *fond* to *pond*. Would you like to fish in the pond? Make *pond*.
5. Change *rip* to *hip*. The man hurt his hip when he fell. Make *hip*.

Be sure to have students proofread their work.

The last exercise provides more practice with spacing and backspacing on the braillewriter. Have students number each item and leave at least one space before writing letter dictated. Each item should begin a new line or column. The letters are the following:

(Exercise B10d on tape)

1. ___ b	7. ___ k
2. ___ r	8. ___ v
3. ___ f	9. ___ p
4. ___ t	10. ___ j
5. ___ q	11. ___ n
6. ___ i	12. ___ g

After students have proofread their work and made any necessary corrections, have them roll the paper back to the first line of the exercise where they will find the letter *b*. Ask students to think of the letter that comes before the letter *b* in the alphabet. (*a*) Have them braille the letter *a* before the *b* on the line without a space between the letters. Students will need to place the embossing head directly in front of the letter *b* so that no space is between it and the *b*, and then braille the letter *a*. Give help as necessary. The completed list should read as follows:

1. ab	7. jk
2. qr	8. uv
3. ef	9. op
4. st	10. ij
5. pq	11. mn
6. hi	12. fg

Have students proofread and make corrections. For additional practice, you may have students return once more to the *ab*, and write the next letter in alphabetical order. (*abc*) If students have difficulty with this, turn to Lesson 8 and review the procedure.

At this point, you may wish to introduce students to contractions (See "Beyond the Basics: Building on What You Know") or simply to put what they have learned to use for a while (See "Beyond the Basics: Applying What You Know").

Slate and Stylus

Lesson 1 — Slate and Stylus

Objectives

To discuss uses of the slate; to introduce the Peg Slate and demonstrate the relationship of reading and writing on it; to teach or review the numbering of dot positions for reading; to introduce the dot positions and the procedures for writing letters with a slate and stylus

Materials needed

Swing Cell and Peg Slate

Procedure

Involve students in a discussion about their use of braille. Tell them they will soon learn to write braille with a slate and stylus. Point out that the slate and stylus are very useful tools because they are inexpensive, easy to carry, and can be available at all times, just like a pen or pencil. Explain that in writing with a slate and stylus they will use what they have already learned about reading braille.

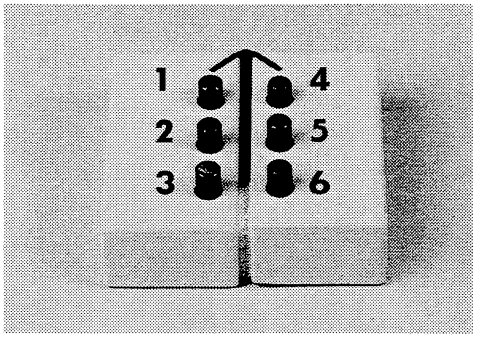
Give students Swing Cells to examine. After students have had time to examine them, center attention on the peg order in reading position. Help students recall that the pegs from top to bottom on the left are numbered 1, 2, and 3 and on the right, 4, 5, and 6. Point out that dot 1 is on the left or the side where they begin reading.

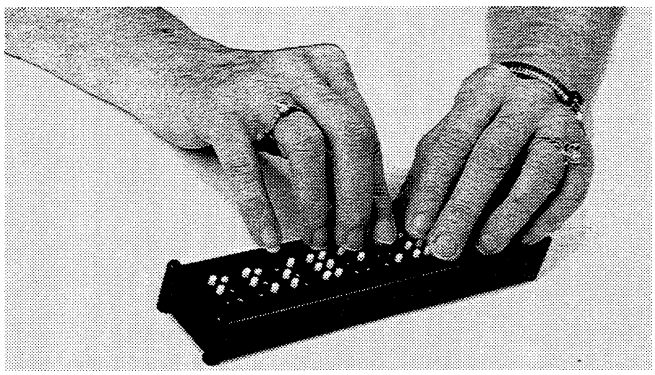
Here is a drill to help students learn or review the dot numbers in the reading position. With a Swing Cell in reading position and all of the pegs removed, give each student a peg to insert to show the following as they are called:

dot 3	dot 1
dot 5	dot 3
dot 4	dot 2
dot 1	dot 5
dot 2	dot 6
dot 6	dot 4

Vary and repeat the drill as needed.

Next give students Peg Slates and time to examine them. Explain that this device is used to introduce the method of writing on a slate, even though the braille cells it contains are larger than those on an actual slate.





After students have had time to examine the Peg Slate and push the pegs in and out, ask them to clear the slates by pushing all the pins down and turning the slate over. Write a letter on each student's Peg Slate. Be sure to demonstrate correct procedure for writing on a slate from right to left as you push the pegs down in numerical order to form letters on the other side. Ask students to turn the slate right-over-left, like a page in a book, and read the letters you have written.

Tell students that when the slate is turned over to be read, the dots are in the correct position for reading. Repeat this procedure several times using different letters. Then explain that when you write on a slate, you start on the right side so dots from top to bottom on the right are numbered 1, 2, and 3 and on the left, 4, 5, and 6.

4 • • 1
5 • • 2
6 • • 3

Terminology Stress the idea that dots 1, 2, and 3 are always on the side where you start—for reading (the left) or for writing on the slate (the right). Never say letters are written "in reverse" or "backwards."

Finally ask students to clear the slate and, with it resting on the table, to push down a peg to make the following dots in the first cell, one at a time. Be sure each student is pushing the peg down correctly before going on to the next one.

dot 6	dot 2
dot 1	dot 3
dot 2	dot 1
dot 4	dot 5
dot 5	dot 4
dot 3	dot 6

Vary and repeat as needed.

Hand use This introductory lesson concentrates on dot numbers. Correct use of hands will be taught as students begin to use the slate and stylus to make specific dots and letters.

Objectives To review dot numbers for reading and writing on a slate; to introduce the slate and stylus and their features; to teach orientation of the slate for writing, placement of paper in the slate, and the correct way to hold a stylus

Materials needed Peg Slate, slate and stylus, Big Cell, 8 1/2" wide braille paper (half sheets)

Procedure

After allowing the students a few minutes to work with the Peg Slate, ask them to recall and if necessary demonstrate the following:

1. When you read, on what side do you begin? (left)
2. When you write on a slate, on what side do you begin? (right)
3. When you read, where are dots 1, 2, and 3 in the cell? (left)
4. When you write on a slate, where are dots 1, 2, and 3 in the cell? (right)
5. When you read, where are dots 4, 5, and 6 in the cell? (right)
6. When you write on a slate, where are dots 4, 5, and 6 in the cell? (left)
7. When you read, where are dots 1 and 4? (on the top)
8. When you write on a slate, where are dots 1 and 4? (on the top)

Next, give the students pocket slates in closed position.

Slate and stylus Lessons in this program are based on the standard 28-cell, 4-line pocket slate. If you are using some other braille slate, such as a board slate, make adaptations in the lessons as necessary.

Instruct students to find the following features of the slate while you describe them:

1. The slate is made of two sections of metal held together by a hinge. Find the hinge and open and close the slate. Be sure you close the slate the right way and do not force it to close or you may break the hinge in the slate and it won't close properly.

2. The bottom section has four rows of pitted cells, 28 in each row. Find the bottom of the slate and rest it flat on the table.

3. The top section has four rows of openings or windows which fit over the pitted cells when the slate is in the closed position. How many windows are in each row? (28)

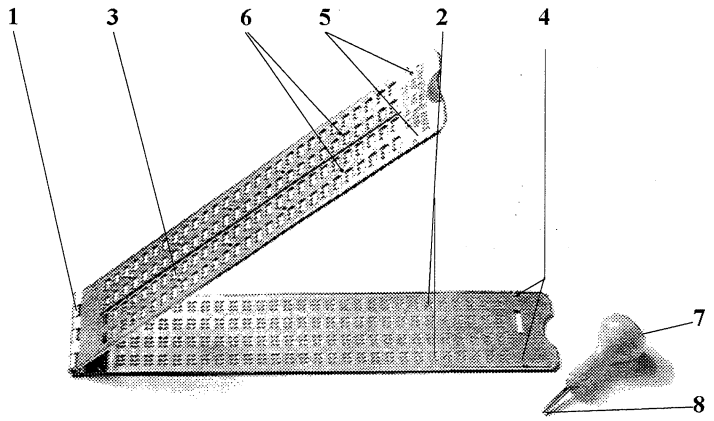
4. The hinge that holds the two sections together is on the left hand side and the section with the windows is on top, when the closed slate is in writing position. Put the slate in this position.

5. When the slate is open, a paper holding pin can be found on each corner of either the top or the bottom section.

6. Find the pins on your slate. The other section of the slate has four holes in the corners into which these pins fit and hold the paper in place while you write. Close the slate to fit the pins into the holes on your slate.

7. See if you can find some big raised dots on the top section of the slate, between rows one and two. What other rows have dots like these between them? (rows three and

PARTS OF THE SLATE AND STYLUS



1. hinge
2. pitted cell
3. window
4. paper-holding pins
5. holes for paper-holding pins
6. dividing dots
7. handle
8. pins

OPEN SLATE AND STYLUS

four) These are called dividing dots. Their purpose is to help you keep your place on the slate. How many cells are between the dividing dots on your slate? (five cells)

Braille paper Braille paper is available in several different sizes and weights. Beginners will find it easier to use smaller, lighter weight paper at first.

Now give students the following instructions for putting paper in the slate:

1. Open the slate enough so that a piece of braille paper can easily be inserted into it.

2. Stand the open slate with the hinge on the left and the window section facing away from you on a flat surface.

3. Now stand a piece of paper up and place it in the slate, sliding it against the hinge on the left while keeping the paper even with the flat surface. (With half sheets of paper, students will insert the short side of the sheet into the opening.)

4. Close the slate and lay it flat on the surface with the window side up. You should hear a popping sound which means the paper is being held in place by the paper-holding pins.

Alternate method The following method of loading paper is preferred by some slate users. You may want to introduce your students to it to see which method they find most practical.

---

1. Place the slate on a flat surface with the hinge on the left.

2. Open the slate enough so that a piece of braille paper can easily be inserted into it.

3. Align the paper in the slate by sliding it against the hinge on the left while keeping the paper even with the top of the slate. Be sure the paper is up against the hinge and over, not against, the paper-holding pins.

4. Close the slate. You should hear a popping sound which means the paper is being held in place by the paper-holding pins. You are now ready to begin writing.

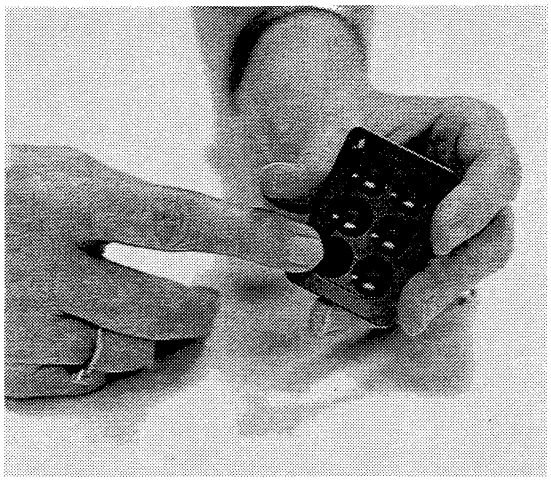
Have students practice putting paper in the slate several times, giving help as necessary. Repeat until you feel students have mastered this technique.



Now give students each a stylus. Show each student how the stylus is to be held. The forefinger curves over the top of the handle, with the fingertip reaching down toward the pin. The thumb fits on the side of the handle, meeting the side of the forefinger.

Ask students to place their closed slates with the hinge on the left and a long side parallel to the desk edge. Next, ask them to explore the closed slate with the stylus, locating the cells in each of the four rows and feeling the pits in the bottom section of the slate.

Next give students a Big Cell and explain that the Big Cell shows them what each cell on their slate is like.



Ask them to find the 6 pits in the Big Cell with their finger. Then have them trace around the opening or window that surrounds these pits. Ask students what they notice about the shape of the window. (It is rectangular but its long sides are not straight. They are rounded or notched.)

Now have students run the tip of the stylus around the perimeters of the openings or windows in the top section of the slate noticing that the outline is bumpy, not smooth. Explain that the small bumps in the outline of the cell help guide the stylus to the individual dots. Work with students to feel the three distinct stylus positions on each side of the cell.

Let students experiment or "scribble" (make random dots) on the paper; then have them open their slates and feel the dots they made.

Explain to students that what they have learned about the braille cell, dot numbers, and shapes will help them write on the slate.

Objectives

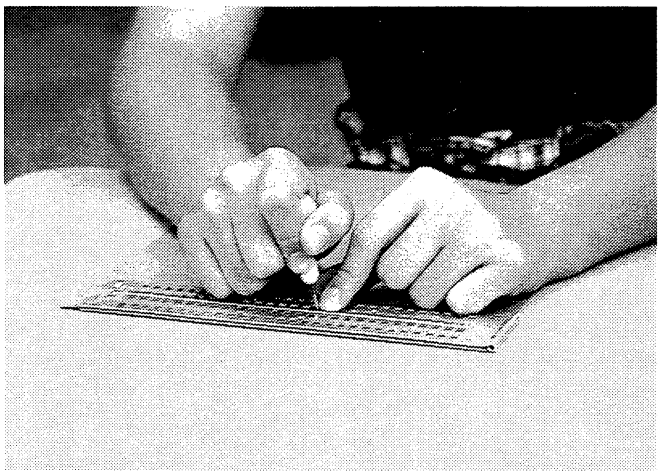
To review placement of paper in the slate, the correct way to hold a stylus, and orientation of the slate for writing; to teach use of the left forefinger as a placefinder while the right hand manipulates the stylus; to have students practice locating and writing on lines 1-4; to introduce dots 1 and 3 and the letters *a* and *k* and the apostrophe; to introduce proofreading

Materials needed

Slate and stylus, 8 1/2" braille paper (half or whole sheets), Alphabet Etc. sheet

Procedure

Ask the students to load their slates and place them in the proper writing position on their desks. Next, ask students to hold their styluses in their right hands ready to write. Give help as needed. Now have students use their left forefingers to find the first cell on the right on the top line. Then have students move their left forefingers across the line, one cell at a time, while the right hand moves the stylus to each cell, meeting the left forefinger.



Right handed vs. left handed slate users
Note that each hand has an important job to do when writing on a slate. This program assumes that one hand cannot trade jobs with the other hand. Just as with piano playing, whether the slate user is right- or left-handed makes no difference; the stylus is always held in the right hand and the left forefinger always acts as the placefinder. However, some slate users prefer to hold the stylus in their left hand and use the right forefinger as the placefinder. If this is the case with a student you are teaching, adapt the instructions accordingly.

Now give these directions:

Return to the beginning of line 1 on the right and use the stylus and left forefinger to locate the first cell. Use the left forefinger and the stylus point in the right hand to find the place for dot 1 in the upper right corner of the cell. Hold the stylus straight up and down, and with the left forefinger as a placefinder helping to keep the stylus in place, push down on the stylus with the right hand. If the stylus is perpendicular to the paper and above the pit, the dot is easily made and a click is heard as the stylus punches each dot. If students have difficulty finding the place for dot 1 on their slates, have them find it on the Big Cell with their fingers before trying to locate it again on the slate with the stylus.

Move the left forefinger to the second cell, followed by the stylus in the right hand. Make dot 1 in this cell as described above.

Continue across the slate, going from right to left, until you have made dot 1 in all the cells on line 1.

Instruct students to remove the paper, turn it over and check what they have written. Tell them to ask themselves the following questions:

1. Were you able to find dot 1 consistently, or were there frequent errors?

2. Was there a pattern to the errors?

3. Were dots of equal height?

4. Were you able to keep a steady pace in writing?

5. Did you write in every cell?

Raise these questions so that students will form goals for subsequent work.

Help students locate the paper-holding pins on their slates and the holes they made on their papers. Then show students how to reload the paper in their slates by replacing the holes over the pins.

Next have students use the Alphabet Etc. sheet to identify the dot needed to write the letter *a*. (dot 1)

Use of Alphabet Etc. sheet Even though students may know how to read the letters, they may not know the dots needed to make them. This program uses the Alphabet Etc. sheet to provide practice in identifying the dots in various braille configurations. If the students you are working with can already identify the dots in various braille configurations, adapt the lessons accordingly.

Have students write another complete row of the letter *a* on line 2 and check their work.

Letter signs Letter signs are not introduced in this program, and when students are asked to braille letters they are not expected to use them.

Line spacing If students are beginning braille readers, you may want to have them skip lines when writing for ease of proofreading. This means you will need to move the slate down the page (see Lesson 4) or have students start a fresh sheet after the second line of writing.

Adapt the instructions from here on as needed to fit the situation.

Next, have students reload their slates. They are now ready to locate dot 3. Instruct as follows:

Locate the first cell of line 3 with your left forefinger. Note that a raised line on the slate helps you distinguish line 2 from line 3. With the stylus in the right hand, locate dot 1 as before. From the dot 1 position, move the stylus down the right side to the bottom of the cell. Hold the stylus straight up and down and push. Remember, if the stylus is in the proper position, the dot is easily made.

Move to cell 2 and make dot 3 again. Continue across the slate from right to left until you complete the line. What is dot 3 by itself? (an apostrophe) Have students locate it on their Alphabet Etc. sheets. The apostrophe is the second braille unit next to a full cell in the middle of the sheet.

Move the left forefinger back across line 3 to

the first cell (moving this time from left to right). Then drop down to the first cell of line 4 and make dots 1 and 3 in the cell. Ask students if they know what letter they just made. (*k*) Encourage students to use their Alphabet Etc. sheets to see if *k* does have dots 1 and 3 in it. Then, beginning in the second cell from the right, have them finish the line of *k*'s. Encourage students to make dots in numerical order, dot 1 and then dot 3, not dot 3 and then dot 1.

Instruct students to remove the paper at the end, turn it over and proofread what they have written.

Hand strength For students who seem especially tired after completing this lesson, check their grip on the stylus; if it is positioned incorrectly, it will lead to fatigue and frustration. You might also want to use some of the strengthening exercises which can be found in the Appendix.

Objectives To review dots 1 and 3, the letters *a* and *k*, and the apostrophe; to introduce dot 4 and dot 6; to introduce *c*, *m*, *u*, *x*, and the capital sign; to begin skipping spaces in writing; to introduce moving the slate down the paper; to have students write words with the letters learned

Materials needed Slate and stylus, 8 1/2" braille paper, Alphabet Etc. sheet

Procedure

Students should have properly loaded and positioned slates in front of them.

As a review dictate the following line as the students write:

dot 1 space	apostrophe space
dot 3 space	dot 1 space
letter k space	letter k space
apostrophe space	letter a space
letter a space	dot 3 space
letter k space	apostrophe space
dot 3 space	letter a space

If necessary, remind students to be sure their fingers are doing their jobs. (Left index finger as placefinder and right index finger and hand as stylus controller.)

Next have students locate line 2, cell 1 with their left forefingers. With the stylus and left forefinger together, have them locate dot 4. Where is it? (top left) Make the dot. Continue across the line making dot 4 in each cell.

Now have students move the left forefinger back across line 2 to cell 1. When cell 1 is located, move down to line 3 cell 1. Have students rest the point of the stylus in this cell to keep the place while they use their hands to locate the letter *c* on their Alphabet Etc. sheets and identify the dots in it. (dots 1 and 4) Have students make a line of *c*'s leaving a space or an empty cell after each one. If they are unsure where to start when they go back to the slate, have students use the stylus to see where they have already written.

Have students follow a similar procedure to find line 4, identify the dots in the letter *m* (dots 1, 3, and 4), and make a line of *m*'s.

Remember to have students remove the paper at appropriate times, turn it over and proofread what they have written.

Now that students have filled all four lines on the slate with braille, it is time for them to move the slate down on the paper. Have students open their slates on a flat surface and find the holes in the paper over the paper-holding pins. Explain that the students must move these bottom holes to the top paper-holding pins. Have them lift the paper from the bottom pins and, holding the paper by the holes made by these pins, slide it toward the top paper-holding pins. When the top pins are located, have the students put the holes over the pins and close the slate. Students should hear a popping sound as two new holes are made at the bottom of the slate. Tell students the paper is now in the second slate position.

Have students repeat this process several more times, before going on.

Next, with the slate in second position, give students practice in making dot 6 shapes, using the following steps as a guide:

In cell 1, line 1, using the left forefinger and stylus together, locate dot 6, the bottom dot on the left. Make a line of dot 6's separated by spaces. What is dot 6 used for? (capital sign) Find the capital sign on the Alphabet Etc. sheet. (third braille unit middle section)

Move to line 2 and mark the beginning of the line with the stylus. Use the Alphabet Etc. sheet to identify the dots in the letter *u*. (dots 1, 3, and 6) As students make a line of *u*'s separated with spaces, encourage them to maintain a steady pace and write the dots in numerical order.

Use a similar procedure for introducing the letter *x*. (dots 1, 3, 4, and 6)

Have students move to the next slate position to begin the next exercise if they haven't already done so. Give help only as necessary.

Here are some words you can dictate for the students to braille using these letters:

(Exercise S4 on tape)

1. *ax* Don't cut yourself with the ax. Write *ax*.
2. *am* I am glad to be here. Write *am*.
3. *mama* My mama always liked to read. Write *mama*.
4. *muck* When I came in from the rain, my shoes were full of muck. Write *muck*.
5. *cam* A cam is a device that changes a motion in a machine. Write *cam*.
6. *ma'am* "Yes, ma'am," the child replied. Write *ma'am*.

Taped exercises Dictation exericises are also available on tape to allow teachers the option of having students work more independently and to practice their braillewriting when the teacher is unavailable.

Numbered exercises Students are not asked to number their lines in dictation exercises at this point, since the necessary dots have not been introduced. Later, when the dots have all been taught, be sure students include the numbers in these exercises.

Spelling The object of the dictation exercises in this program is not to teach spelling, but rather to give paced practice in braillewriting. Whether you use the tape recorded instructions for dictation exercises or give them yourself, simply ask students to do their best with spelling, giving help where appropriate.

Have students proofread their work and rewrite any words that need corrections.

Lesson 5

Slate and Stylus

Objectives

To review the letters *a*, *c*, *k*, *m*, *u*, and *x* and the capital sign; to teach dot 2; to introduce the letters *l*, *b*, and *f* and the comma; to have students write words and phrases with the letters learned and use dividing dots to make columns

Materials needed

Slate and stylus, 8 1/2" braille paper, Alphabet Etc. sheet

Procedure

Have students begin by writing each letter they have learned four times on the first line of their papers. The letters are *a*, *c*, *k*, *m*, *u*, and *x*. The finished line should look like this: *a a a a c c c c k k k k m m m m u u u u x x x x*.

Now dictate the following letters for the students to braille on one line:

(Exercise S5a on tape)
a capital A space
c capital C space
k capital K space
m capital M space
u capital U space
x capital X space

Have them check their work. It should look like this: aA cC kK mM uU xX

Next, remind students about the dividing dots found after every five cells on the slate. Have students find the dividing dots again on their slates. What uses can students think of for these dots? (for counting line lengths by 5's, for keeping their place for writing in columns)

Have students write *Mama* on line 1 beginning in cell 1, *Mack* in cell 11, and *Max* in cell 21. Remind students to use the dividing dots to find out where they should begin brailling and to write the names with the capital sign. On line 2 in cells 1, 11, and 21, have students write *Mack*, *Max*, and *Mama*. On line 3, in cells 1, 11, and 21, have students write *Max*, *Mama*, and *Mack*. If students have done this exercise correctly, every column and every line should have all three names like this:

Mama	Mack	Max
Mack	Max	Mama
Max	Mama	Mack

Have students proofread their work. If students had difficulty using the dividing dots to help them make columns, you might want to provide some additional practice in locating particular cells.

Next instruct students in making dot 2 using the following as a guide:

In cell 1, line 1, using the left forefinger and stylus together, locate dot 2, the middle dot on the right. Dot 2 does not have a corner to support it as do dots 1, 2, 4, and 6. Dot 2 is between dots 1 and 3 and may be found by locating dot 1 first. (Some students may need to find dot 2 on the Big Cell before trying to make it on the slate.) Make dots 1, 2, and 3 five times. Then make dot 2 by itself across the rest of the line. What does dot 2 by itself represent? (the comma) Have students find the comma on the Alphabet Etc. sheet. (first braille unit written after a full cell in the middle section)

Have students use the Alphabet Etc. sheet to identify the dots in the letter *l*. (dots 1, 2, and 3) Then have them write a line of *l*'s, spacing after each letter. Follow a similar procedure to introduce the letters *b* (dots 1 and 2) and *f*

(dots 1, 2, and 4). Finally have them write the three new letters *l*, *b*, and *f*, separating each letter from the next with a comma and a space.

Now dictate the following words which contain the new letters.

(Exercise S5b on tape)

1. *luck* Hard work often brings good luck. Write *luck*.
2. *flax* Linen cloth is made from flax. Write *flax*.
3. *bulb* Did you ever plant the tulip bulb? Write *bulb*.
4. *lamb* The little lamb searched for its mother. Write *lamb*.
5. *bluff* The bluff seemed too high for us to climb. Write *bluff*.

Have students proofread their work and make corrections.

Here are some phrases to dictate for the students to braille. Remind students to capitalize names.

(Exercise S5c on tape)

1. a calm clam
2. fax Max
3. a full mall
4. blackball Buck

Have students correct any errors.

Objectives

To review the letters *a*, *b*, *c*, *f*, *k*, *l*, *m*, *u*, and *x* and the comma; to introduce the letters *i*, *s*, *p*, and *v* which also contain dot 2; to have students write words and phrases with the letters learned; to introduce adding dots to correct errors

Materials needed

Slate and stylus, 8 1/2" braille paper, Alphabet Etc. sheet, braille eraser

Procedure

Have students begin by putting paper in their slates and making a line of blf, flb, blf, flb, ... to review the dot 2 letters and the comma from the last lesson and to build speed.

Next have students write the following words as you dictate them:

(Exercise S6a on tape)
1. *back* What time will you be back? Write *back*.
2. *flu* Don't forget to get your flu shot this year. Write *flu*.
3. *calf* The calf was in the barn. Write *calf*.
4. *lab* The scientist was busy in the lab. Write *lab*.

Next have students write a line of each of these new letters containing dot 2, using the Alphabet Etc. sheet to identify the dots in each letter before trying to write it:

i (dots 2, 4) s (dots 2, 3, 4)
p (dots 1, 2, 3, 4) v (dots 1, 2, 3, 6)

Now ask students to write the following groups of words as you dictate them slowly. Have them begin each group on a new line and put a comma and a space between the words:

(Exercise S6b on tape)
1. cub, pub, club
2. six, fix, mix
3. lamp, vamp, camp, clamp
4. lick, pick, slick, flick
5. usual, visual, casual

Here are some phrases you can dictate for the students to braille.

(Exercise S6c on tape)

1. ball cap	4. black lambs	7. slick flick
2. pack film	5. plump lump	8. fix a clamp
3. slim calf	6. full flask	9. pick six plums

Remind students to move their slates on their papers at appropriate times and to proofread what they have written. They should check for accuracy in making dots and in spacing.

Although rewriting is usually preferable to correcting errors in braille, especially for a sighted teacher, braille errors can be acceptably corrected with practice. To add missing dots to a braille shape, the paper must be reloaded in the slate and the correct line and cell located. Students may count to find the cell where the error occurs and use the dividing dots to relocate that cell, or they may prefer to "home in" on the error by exploring different cells with the stylus tip until the right one is found.

For practice adding dots on the slate, have students do the following:

1. Braille ten a's with spaces separating them.
2. Proofread the ten a's and make corrections.
3. Add dots to each a to make the letters
   c, k, m, u, x, v, p, b, f, l.

Lesson 7

Slate and Stylus

Objectives

To review *a*, *b*, *c*, *f*, *i*, *k*, *l*, *m*, *p*, *s*, *u*, *v*, and *x*; to make dot 5; to introduce the letters *d*, *e*, *h*, *j*, *o*, *r*, and the period; to have students write words and sentences with the letters learned; to introduce erasing dots to correct errors

Materials needed

Slate and stylus, 8 1/2" braille paper, Alphabet Etc. sheet, braille eraser

Procedure

Begin by dictating the following words which review the letters the students have been learning. Have students write the words on the first two lines with a space after each word.

(Exercise S7a on tape)
1. *ask* Ask me the question. Write *ask*.
2. *bump* Please don't bump my arm. Write *bump*.
3. *cuff* Mr. Smith got his shirt cuff dirty. Write *cuff*.
4. *flax* Linen is made of flax. Write *flax*.
5. *kiss* I want to kiss the baby. Write *kiss*.
6. *black* The boy wore his black shoes. Write *black*.
7. *mix* Please help me mix the cake. Write *mix*.
8. *lava* Hot lava came from the volcano. Write *lava*.

After students have proofread the words and made corrections, have them make dot 5, using the following as a guide:

In cell 1, line 3, using the left forefinger and stylus together, locate dot 5, the middle dot on the left. Use the Big Cell as needed. For orientation, make dots 4, 5, and 6 five times. Then make dot 5 by itself across the rest of the line.

Have students use the Alphabet Etc. sheet to identify the dots in the letter *d*. (dots 1, 4, and 5) Then have them write a line of *d*'s, with a space after each one.

Follow a similar procedure to introduce these letters which include dot 5. Use the Alphabet Etc. sheet first to identify the dots.

j (dots 2, 4, 5)
e (dots 1, 5)
o (dots 1, 3, 5)
r (dots 1, 2, 3, 5)
h (dots 1, 2, 5)

When students have practiced the new letters, have them write the following words, including commas, as in the previous lesson:

(Exercise S7b on tape)
1. hide, ride, bide
2. rod, cod, mod
3. jive, hive, five, live

Have students find the period on the Alphabet Etc. sheet (middle section fourth braille unit) and identify the dots in it. (dots 2, 5, and 6). After they have written three periods next to full cells correctly on their papers, ask students to write these sentences from dictation or from a brailled version you supply. Remind them to use capitals, commas, and periods, to space once between sentences, and to move to a new line when appropriate. Remind them also that the apostrophe is dot 3; although this was brought up in an earlier lesson, it was not practiced at that time.

(Exercise S7c on tape)
1. Rob's mule is cool.
2. A spire is afire, sire.
3. Rex's job is a joke. He's broke.

Students should remove their papers at appropriate times to read what they have written, and check for accuracy in making dots and in spacing.

Next introduce students to erasing dots to fix errors. Explain that extra dots can be erased either with your finger or with a braille eraser. Give students a braille eraser to examine and explain that the narrower end is used to push the unwanted dot down flat while turning the eraser. Have students braille six *l*'s. Then have them try erasing dot 1 in the first *l* with their finger and in the second with the eraser. Be sure they proofread their work. Follow a similar procedure for erasing dot 2 in the next two *l*'s and dot 3 in the last two.

Now have the students braille the letters *v*, *p*, *l*, *m*, *f*, and *s* and proofread their work. Then, using whichever method the students prefer, have them erase dots to make the following:

(Exercise S7d on tape)

1. Change the *v* to *l*.
2. Change the *p* to *f*.
3. Change the *l* to *k*.
4. Change the *m* to *c*.
5. Change the *f* to *b*.
6. Change the *s* to *i*.

Be sure students proofread their work.

Objectives

To review the letters *a*, *b*, *c*, *d*, *e*, *f*, *h*, *i*, *j*, *k*, *l*, *m*, *o*, *p*, *r*, *s*, *u*, *v*, and *x*; to introduce the question mark and the letters *g*, *q*, *w*, *z*, *n*, *t*, and *y*; to have students write words and sentences with the letters and punctuation learned; to review adding and erasing dots to correct errors; to explain more about spacing and making columns

Materials needed

Slate and stylus, 8 1/2" braille paper, Alphabet Etc. sheet, braille eraser (if desired)

Procedure

Begin by having students write five dot 5's. Then dictate the following sentences as a review:

(Exercise S8a on tape)
1. Jeff drove a jeep back home.
2. Max has pluck, skill, or luck.
3. Alex rides a horse up a ramp.
4. Vick climbs oaks, elms, or maples.
5. Pam fixes Brad cola, milk, or juice at home.

After students have proofread their work, have them find the letter *g* on the Alphabet Etc. sheet and identify the dots in it. (dots 1, 2, 4, and 5) Then have them make a line of *g*'s. Proceed in a similar way with these remaining letters:

q (dots 1, 2, 3, 4, 5) n (dots 1, 3, 4, 5)
w (dots 2, 4, 5, 6) t (dots 2, 3, 4, 5)
z (dots 1, 3, 5, 6) y (dots 1, 3, 4, 5, 6)

For practice, have students write the following words:

(Exercise S8b on tape)
1. *gold* All that glitters is not gold. Write *gold*.
2. *quiet* Sometimes it is hard to be quiet. Write *quiet*.
3. *wild* That rabbit is a wild animal. Write *wild*.
4. *zoom* Planes zoom overhead. Write *zoom*.
5. *notes* Do I hear musical notes? Write *notes*.
6. *toy* The baby is having fun with her new toy. Write *toy*.
7. *yes* We like people who say, "Yes." Write *yes*.

Now have students find the question mark on the Alphabet Etc. sheet (middle section, last braille unit) and identify the dots in it. (dots 2, 3, and 6) Then have students write three question marks next to full cells before doing these practice sentences from dictation:

(Exercise S8c on tape)
1. Jody took a quiet quiz.
2. Does Zack's net get wet?
3. New York City annoys Mr. Queeg.
4. Did I see Yaz get a hit?
5. We jog away, we zigzag home.

Next, have students practice adding and erasing dots to correct errors. Tell them to write the following letters on the same line with a space after each one: *m u b p i k*. They should proofread their work before continuing. Now give these directions:

(Exercise S8d on tape)
1. Go back and change *m* to *k*.
2. Go back and change *u* to *x*.
3. Go back and change *b* to *l*.
4. Go back and change *p* to *f*.
5. Go back and change *i* to *s*.
6. Go back and change *k* to *l*.

The finished line should have the following letters with one space between each one:
k x l f s l

The next exercise builds on what students know about backspacing and writing in columns. Have the students write each of these letters at the beginning of a new line: *j t q f*. Then write these letters each on a different line in a second column: *y p s m*. Remind students to use dividing dots to help them make the second column. Letters should not be followed by commas or spaces.

After students have proofread their work and made any necessary corrections, have them return to the first line, the one with the letter *j* on it. Ask students to think of the letter that comes after the letter *j* in the alphabet. (*k*) Have them braille the *k* after the *j* without a space between them. Have students follow a similar procedure to complete work on the list of letters. Give help as necessary. The completed list should read as follows:

jk yz
tu pq
qr st
fg mn

Objectives	To review the alphabet; to introduce the number sign; to have students practice writing numerals, alone and in sentences
Materials needed	Slate and stylus, braille paper, Alphabet Etc. sheet, large dice (two for each student)

Procedure

Have students begin by writing the alphabet as quickly as possible, keeping a steady, even pace.

Now have students find the numbers on the bottom section of the Alphabet Etc. sheet and identify the dots in the number sign. (dots 3, 4, 5, and 6) Have students make five number signs, spacing once after each one.

Note that the letters *a* through *j* are written after the number sign to form numerals. Have students write the numerals 0 through 10, using the Alphabet Etc. sheet as needed and spacing after each numeral. If necessary point out that 10 is written number sign a no number sign j in braille. Give help as needed. Then have students write the numerals counting by tens to 100.

When you feel students understand how to write numerals, have them number their answers and write numerals for the following:

(Exercise S9a on tape)
1. The number of people in a quartet. (4)
2. The number of sides in a triangle. (3)
3. The number of people living in your home.
4. The number of days in a week. (7)
5. The number of months in a year. (12)
6. The number of letters in your last name.
7. The number of letters in the alphabet. (26)
8. The number of cents in a dollar. (100)
9. The number of inches in a foot. (12)
10. The number of hours in a day. (24)

Have students proofread their papers and make any necessary corrections.

Next have students braille the following sentences which contain numbers. Be sure they number the sentences.

(Exercise S9b on tape)
1. Frank drove 9 miles.
2. Date my message July 17, 2001.
3. Holly's book has 56 pages.
4. Grade 4 put on a play.
5. A case holds 38 tapes.

Have students proofread their work and correct any errors.

For additional practice with writing two-digit numerals, give each student two dice and have them roll them and write the two numbers shown as a two-digit numeral. For example, if the student rolled a 5 and a 2, he or she could write 52 or 25. Have students write 10 different numerals formed in this way.

If students seem to need more practice with numbers, exercises from Lesson 9 on Braillewriter could be used.

Nemeth Code If students are not already aware that there is another code for mathematics, this might be a good time to point out that there is, that it is called Nemeth Code and that numbers should be written in Nemeth Code for arithmetic problems.

Rolling dice To help students locate the dice after rolling them, you might want to have them roll them in a small box such as a shoebox lid. Also, if students need embossed dice, they are available from the American Foundation for the Blind.

Objectives To review all the letters, numbers, dots, punctuation marks, and spacing learned; to review error correction by adding and erasing dots

Materials needed Slate and stylus, braille paper, Alphabet Etc. sheet, dice (one die for each student)

Procedure

Start the review by having students look at their Alphabet Etc. sheets and note the following ideas about how the alphabet is formed in braille:

1. the first row, *a* through *j*, uses only the dots in the upper part of the cell (dots 1, 2, 4, and 5)
2. the second row copies the first, but with dot 3 added to each shape
3. the letters *u*, *v*, *x*, *y*, and *z* in the third row copy the second row, with dot 6 added
4. the *w* breaks the pattern because it was inserted after the original code was invented

Then have students write the alphabet beginning with capital *A*, next lowercase *a*, then space. Have students continue on through the alphabet, changing lines when necessary and proofreading their work when finished. Their finished papers should look something like this:

Aa Bb Cc Dd Ee Ff Gg Hh Ii
Jj Kk Ll Mm Nn Oo Pp Qq Rr
Ss Tt Uu Vv Ww Xx Yy Zz

Have students correct and practice any letters they missed.

Now for practice with dots and spacing, give students dice and have them roll a die and braille the dot for the number shown on the die in a cell. Next have them roll the die again. This time students may do one of the following:

1. space and make the dot for the second number shown in a different cell or
2. add the dot for the second number shown to the first dot already on the paper.

Have students continue rolling the dice and following a similar procedure until they have made five different letters on their papers. Students may use their Alphabet Etc. sheets as needed.

Next, to review the letters, numbers, capitals, and punctuation marks learned, have pupils braille the following sentences. Be sure students number the sentences on their papers.

(Exercise S10a on tape)
1. Hank likes Grade 2.
2. Did Phil walk 5 miles?
3. Let's all say hello at once.
4. Turtle wax makes surfaces glossy.
5. Vicky's maple nut fudge won 7 prizes.
6. I saw a quizzical look on Rob's face.
7. Jack has a quilt Aunt Val made.
8. Did Betty or Zack take turns on a slide, a seesaw, or a jungle gym?

Finally have students review erasing and adding dots to correct errors. Begin by having them braille these words:

(Exercise S10b on tape)
1. *luck* Lately my luck has all been good. Write *luck*.

2. *pack* What will you pack in your bag? Write *pack*.
3. *clip* A clip keeps things together. Write *clip*.
4. *map* We need a map to find our way home. Write *map*.
5. *pill* "One pill is all you will need," the doctor said. Write *pill*.
6. *hum* Mom will hum while she works. Write *hum*.

Have students proofread their work and make any corrections. Then have students add or erase dots to make the following new words:

(Exercise S10c on tape)

1. Change *luck* to *buck*. A male deer is a buck. Make the word *buck*.
2. Change *pack* to *sack*. A sack is a kind of bag. Make the word *sack*.
3. Change *clip* to *flip*. The referee will flip a coin to start the match. Make the word *flip*.
4. Change *map* to *cap*. The boy likes to wear his new cap. Make the word *cap*.
5. Change *pill* to *fill*. Please fill my glass. Make the word *fill*.
6. Change *hum* to *rum*. Butter rum candy tastes good. Make the word *rum*.

Be sure students proofread their work.

The next exercise provides more practice with spacing. Have students number each item and leave at least one space before writing the letter dictated. Each item should begin a new line or column.

(Exercise S10d on tape)

1. __s	5. __o	9. __d
2. __e	6. __c	10. __w
3. __y	7. __m	11. __l
4. __h	8. __u	12. __x

After students have proofread their work and made any necessary corrections, have them go back to the first line of the exercise where they will find the letter *s*. Ask students to think of the letter that comes before the letter *s* in the alphabet. (*r*) Have them write the letter *r* before the *s* on the line without a space between the letters. Give help as necessary. The completed list should read as follows:

1. rs	7. lm
2. de	8. tu
3. xy	9. cd
4. gh	10. vw
5. no	11. kl
6. bc	12. wx

Have students proofread and make corrections. For additional practice, you may have students return once more to the *rs* and write the next letter in alphabetical order. (*rst*)

At this point, you may wish to introduce students to contractions (See "Beyond the Basics: Building on What You Know") or simply to put what they have learned to use for a while (See "Beyond the Basics: Applying What You Know").

Beyond the Basics

Beyond the Basics: Building on What You Know

Objectives

To help students expand on what they know about brailling, to write braille units that have not been formally introduced, and to teach and practice correct braille format

Materials needed

Several braille books and/or magazines; braillewriter or slate and stylus; braille paper; reference materials as cited in the lesson

Procedure

Explain to students that they now know how to make all of the letters, capitals, periods, question marks, commas, apostrophes, and numbers, but there are many more braille configurations. They should be able to write them by looking at the dots in them and then making those dots.

To demonstrate this give each student a card with the name *Mary Smith* written on it. Have the name read and the braille units which are not letters identified. (*ar* in M*ar*y and *th* in Smi*th*) Ask students to identify the dots in these braille units and then braille the name. Follow a similar procedure with the name Pe*ter Jone*s, noting the *er* in Pet*er* (dots 1, 2, 4, 5, and 6) and the *one* in *Jone*s (dot 5 *o*).

Then give students cards with their first and last names in correct Grade 2 Braille and after analyzing the braille units, have them brailled. For additional practice, you may have students exchange cards or give students additional cards with names on them to braille.

Next give students a braille book or magazine and ask them to find and braille ten things which they have not brailled before. Lists should include punctuation marks as well as other Grade 2 Braille units.

At this point, this lesson can be expanded to provide additional practice as you feel is necessary. Each braille unit can be introduced in the same way the brailling of each letter was introduced in previous lessons. In many cases the braille user will also be learning to read braille units. For writing practice, the student can braille poems, favorite parts of passages being read, or exercises on specific braille units. At some point you will want to introduce the students to one (or all) of the following references for Grade 2 Braille available from the American Printing House for the Blind and demonstrate its(their) use in identifying braille units and the letters they represent.

Krebs' Braille in Brief Chart of Braille Characters and Contractions 1 v., 22pp., Cat. No. 5-17110-00

English Braille Grade 2 Contractions, Word Signs, Short-Form Words, and Punctuation and Composition Signs, 1 v., 8pp., Cat. No. 5-35960-00

Grade 2 Braille Cards, 247 cards, Cat. No. 1-03561-00

Next discuss formatting rules for braillewriting with the students. Tell them that style, punctuation, and format are the same in braille as in print, with just a few exceptions. Here are the major exceptions to point out:

1. Only one space is left after periods, exclamation marks, and question marks (i.e. any end-of-sentence mark) as well as after colons and quotation marks. Ask students how many spaces are usually left after these punctuation marks in print. (two spaces)

Ask why less space might be left in braille than in print. (because braille already takes up more room than print and if too much space is left in braille, the reader may get lost)

2. Paragraphs are indented two spaces rather than blocked and a line is not skipped between paragraphs. Ask students how many spaces are usually indented in print. (five) Ask why it would be better not to use block paragraphs in braille. (because it takes less space to indent paragraphs than to skip lines between paragraphs)

3. Page numbers generally go in the upper right, at the end of the first line of writing with three blank spaces before the number. Ask students where page numbers can be found in print books. (top middle, left and/or right, top or bottom of the page, above or below but never with the text) Ask why pupils think braille page numbers are usually in the upper right at the end of the first line. (so they take up less space and are easy to find)

Next have students use braille books and magazines, as well as what they have learned about punctuation marks, paragraphs, and pages, to find five different punctuation marks and to braille the page number and the paragraph number in which each was found. Then have students find and copy a short paragraph or two.

Finally, explain that for everyday tasks, these rules will probably suffice, but that students can find out more about the rules for writing braille in one of the following reference books available from the American Printing House for the Blind:

English Braille, American Edition, 1 v., 193 pp., Cat. No. 5-35930-00

Chart of English Braille, American Edition 1959; Contractions, Selected Symbols and Simplified Rules, 1 v., 13 pp., Cat. No. 5-22310-00

Beyond the Basics: Applying What You Know

Objectives To discuss practical uses for braillewriting and to help students put what they have learned about braillewriting into practice

Materials needed Specific materials are given in the discussion of each braillewriting task

Procedure

Begin by having students give some advantages of using a braillewriter for writing braille. Then follow a similar procedure for the slate and stylus. Accept any answers students can justify. Be sure to stress the following ideas: (a) that good, readable braille can be made with either a braillewriter or a slate and stylus, (b) that the braillewriter is faster, and (c) the slate and stylus are portable and versatile.

Then discuss the following eight braille writing tasks with students. Include a discussion of whether a braillewriter or a slate and stylus would be better suited to each task and whether any special devices or materials are available to make the task easier. Also relate any tips for making the task easier to do. The write-up for each task is meant only as a starting point for discussion and sharing ideas. After discussing a braillewriting task, give students the opportunity to do that task, perhaps spending from one to several days on each task. If time constraints make this impossible, at least discuss all the tasks and do as many as time will allow. Choose the tasks that you feel are most relevant for each individual student if some must be eliminated.

1. *Address Files* It is important for braille readers to braille information about sources for special products and it is important for them to have the addresses of family members and friends. Address lists may be kept in a small looseleaf notebook or on index cards. If cards are to be filed in a file box, they can be placed in the box with the braille turned toward the back of the box and the card upside down. This positioning of the cards makes them easily read while they remain in the box. To make it even easier to locate a specific card in the box, the name of the company or the person can be brailled on the last line of the card instead of the first.

Activity Have students write the following sources for equipment and supplies which you can braille and have them copy or dictate while they braille:

(Exercise BB1 on tape)

American Foundation for the Blind
15 West 16th Street
New York, NY 10011

American Printing House for the Blind
P. O. Box 6085
Louisville, KY 40206-0085

Howe Press of
Perkins School for the Blind
175 North Beacon Street
Watertown, MA 02172-0082

Independent Living Aids, Inc.
1500 New Horizons Blvd.
Amityville, NY 11701

LS & S Group, Inc.
P. O. Box 673
Northbrook, IL 60065

MaxiAids
42 Executive Boulevard
P. O. Box 3209
Farmingdale, NY 11735

VisAids Inc.
102-09 Jamaica Avenue
P. O. Box 26
Richmond Hill, NY 11418

Encourage students to add other names, addresses, and phone numbers of friends and relatives to their address files so that they will really be usable.

2. *Letter writing* There are times when you will want to write a letter in braille or compose one in braille before typing it, writing it on a computer, or dictating it. Letter format is the same as for print letters except often everything is brailled flush left. Some people prefer white or buff paper instead of brown to make their correspondence more attractive.

The letter can be made ready for mailing by folding the paper to fit a regular business sized envelope that has been addressed on the typewriter or by hand. Also, the letter can be folded in the middle, taped at the bottom and addressed in print on the outside. If the paper is folded before the letter is brailled, blank lines can be left where the paper is folded and the braille message will not be obliterated. Another way to mail a braille letter is to roll the letter in a business sized envelope that has been slit on the ends. Also, mailing tubes available from APH can be used for this purpose.

A copy of the mail code referring to mailing braille letters and other special items free of postage can be obtained at the local post office.

Activity Think of someone you need to write a letter to and compose a braille letter. Perhaps you could write and request catalogs from some of the sources listed.

3. *Playing cards* With a little time spent brailling cards, the braille reader can join friends in many games of cards. The easiest way to braille cards is to use a specially designed slate from Howe Press, although a regular slate also works well. A braillewriter will roll the cards up and therefore should not be used. In order to make the braille uniform in length (i.e., so that a sighted friend cannot spot particular cards easily), the letter x (no number sign) is used instead of 10. All labels are two cells long; thus *fh* is six of hearts, *xs* is ten of spades, *jd* is jack of diamonds, *ac* is ace of clubs, *jo* is joker.

Activity Have students braille a deck of cards. Have a sighted helper read each card and then have the student braille it, or have a helper arrange the cards in some agreed upon order for the student to braille.

4. *Recipes* How can the blind cook make all the old family favorites or even make convenience foods when the directions on the boxes are in print? The answer is by brailling the recipes. Using laminated paper or thermoform plastic for recipes is helpful because the dots are firm and the paper is washable. Pressing clear contact paper on the front and back of braille paper before brailling the recipe is an inexpensive way to laminate the paper and also helps to keep it clean. Brailled recipes should be punched and arranged in a notebook.

Activity Have students collect packages of convenient foods they like to fix. Have a helper record several recipes from the packages on cassette tape and then have the students braille them. If possible, have students choose one recipe to try out after it is brailled.

5. *Labels* Braille labels can make life a lot easier. Braille labels can be made in several ways. Using self-adhesive plastic tape is a common method. There are special slates and even a tape holder for the braillewriter for writing on plastic tape, but adhesive tape can also be used to hold the plastic tape in place. Be sure the plastic tape is placed in a slate with the disposable backing up so that the braille is written on the side that is to be read.

   Another way to label is to braille on reinforced laminated paper and then hold the finished label in place with glue or a rubber band. An easy way to reinforce paper without expensive equipment is by using clear contact paper. After contact paper is placed on the braille paper, it can be inserted in the slate, brailled, and then cut to the proper size. Magnetic tape is good for labeling cans.

Activity Have students make appropriate labels for something of theirs that they feel would be more convenient to use if they had braille labels. Some suggestions are records, tapes, or CD's; canned goods; etc.

6. *Columns* Writing in columns can be a very convenient way to organize a lot of information in a small amount of space. You have learned how to make two columns with plenty of room around each one. To make several columns, it is a good idea to plan ahead. Think about the longest items you will want to put in each column and about the number of spaces you will want between columns. Then think about the number of spaces you have in each line. Will you be able to put the columns, with spaces between, across one line? Will you be able to leave more or fewer spaces between columns to get the columns and spaces to fit evenly on the page? Is there any way you can shorten the material so that it will fit on one page, or will you need to use an additional page or pages for some of the columns? Be sure the information in the columns will be understandable to the reader, whether it be you or a number of braille readers.

Activity Use columns to braille a calendar for this month, to record the last five checks you wrote, to make a shopping list with at least three columns indicating stores or places where each item could be found, and/or to list the braille letters, punctuation marks, letter words, dot 5 words and other contractions, shortforms, etc. which you have learned.

7. *Notetaking* Different kinds of notes are needed for different kinds of situations so braille notes can be written in several different ways. Regular braille paper or note cards can be used, as well as thinner paper such as typing paper when notes will be read a limited number of times. The disadvantage of lightweight paper is that the dots wear down easily. Writing on lightweight paper is quieter than on heavy paper, and may be considered for use when writing in a group situation (classroom, lecture, etc.). Another option is to use a stenographers notebook or legal pad. The pages can be left intact in the notebook or tablet for ease in organization. The top binding also makes it easy to move to a new page. Specially made slates that fit an index card make notewriting on cards very easy. One kind of slate opens like a pocket slate, but has six lines and fewer cells per line than a pocket slate. Another kind of slate for cards is made with closed ends and no pins so that the card can be slipped in and out. Small spiral-bound booklets of braille paper are also available with small slates for taking notes.

Activity Choose the most appropriate materials and try taking notes from a recording of a social studies book or some other factual book (some students might even try outlining), pre

paring notes for conducting an interview, and making notes for a speech on the topic of your choice.

8. *Speed brailling* No matter what method of brailling you are using, speed will make you more effective.

Activity In order to improve your speed, try using a metronome (get this from a piano teacher). You can set the rhythm very slowly at first and as you get more comfortable with brailling you can speed up the tempo. Then choose one of the following sentences which contain all the letters in the alphabet and write it on your braillewriter or slate as many times as you can in one minute.

(Exercise BB2 on tape)

1. Crazy John Maxwell quietly keeps big fads alive.
2. At dawn we view a lazy orange fox back on a hill quietly jump up.
3. Hunt a vet pronto if my old ox Buck quakes, jigs, or waltzes.

This activity can be repeated with the same sentence at regular intervals to check for improvement.

Beyond the Basics: Knowing the Tools

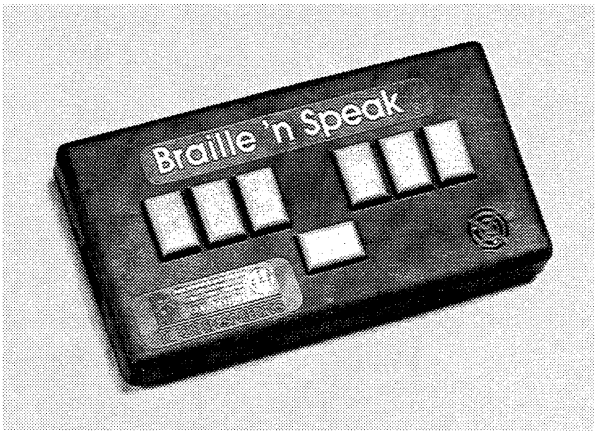
Objectives — To expose students to a variety of braille writing tools and devices and to provide resources for these materials

Materials needed — As many of the materials mentioned in the lesson as possible

Procedure

Begin by telling students that by now they know at least one way to write braille. Review with students the kinds of materials they have used for braillewriting so far. (Braillewriter and/or slate and stylus, braille paper, braille eraser, etc.) Tell students that there are a variety of tools for writing braille just as there are a variety of tools for producing print such as pens, markers, typewriters, printers, labelers, various kinds of paper, etc. Then direct students' attention to each of the following materials as you describe it and describe how it might be used. If possible, try to have each item available for the students to examine and/or try out. Feel free to tell the students about any additional items you feel would be of interest. (Note: This is a partial list; it contains some of the devices or tools that are or have been commonly used to write braille. A list of manufacturers' addresses appears at the end.)

Once the keyboard on a braillewriter has been mastered and you can write braille, you can use related devices to do a variety of things. With the right device, you can produce speech and jumbo braille, use a computer, or make readable braille without using any paper. And, who knows what else the future will bring!



<u>Devices with a braillewriter style keyboard</u>

Mechanical braillewriters (alternatives to Perkins Brailler):
Mini Picht Brailler (smaller paper size) (RNIB)Erica 500 (RNIB)

Notetakers with speech output:

Braille 'n Speak 640 (Blazie Engineering)
Braille 'n Speak Classic (APH)
Braillemate (Telesensory)

Computer programs that allow for braille input on a standard computer keyboard:

Edgar Systems (Duxbury)
Pokadot (National Braille Association)
BEX and TranscriBEX (Raised Dot Computing)
KPC (CSS Associates)

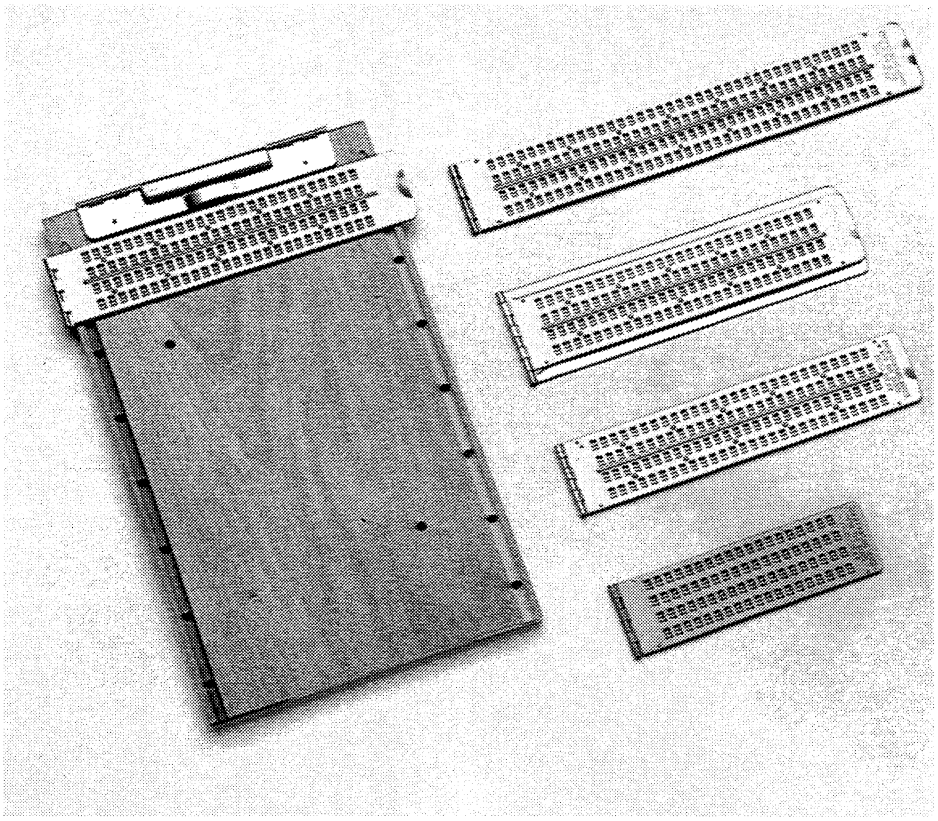
Paperless or refreshable braille devices:

Braille Lite (Blazie Engineering)
Versabraille (Telesensory Inc.)
Navigator (Telesensory Inc.)
Large Cell Perkins Brailler (Howe Press)

Braillewriter Accessories

A few accessories can make doing some braillewriting tasks easier. Here are some which you might like to know about:

Dymo Tape Holder (Howe Press)
Line Scale (Howe Press) identifies the lines of braille and the lines remaining to be embossed.
Narrow-Paper Adapter (Howe Press)



Slates

Slates are available in many kinds, shapes and sizes. All of them, however, are designed for the same purpose—to enable a person to write braille. Most slates that are available in this country are made according to the standard measurements of space between dots, space between cells and height of dots. Slates are available with larger proportions (jumbo braille) and smaller proportions (micro dot braille) for people with special needs or preference. Special slates are also available for making certain braillewriting tasks easier.

Correcting Slate (APH) 38 cells per line, 4 lines

Brown Slate (APH) 28 cells per line, 4 lines. Back of slate opens to allow for reading without removing paper from frame of slate

Jumbo E-Z Read Slate (Howe Press) 18 cells, 4 lines for oversized cells and dots

Playing Card Slate (Howe Press) for standard playing cards

Single Line Slate (Howe Press) 25 cells for embossing plastic tape

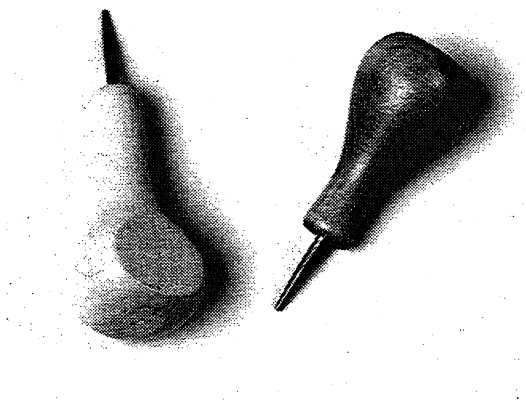
Jiffy Slate (Howe Press) 19 cells per line, 6 lines with no pins or hinges for 3" x 5" cards

Cassette Labeling Slate (Howe Press)

Desk Slates with a wooden board on which the slate is seated

Tylor Margin Guilde (RNIB) 4 cells; clips over the edge of a page and allows you to make margin notes and numbers and number pages

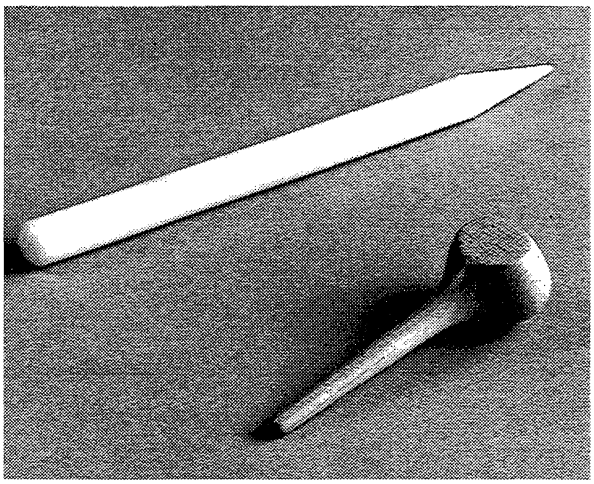
Styluses



Styluses are available with small handles for young children and with larger handles for older children and adults. Handles may also vary in shape. Other characteristics of the stylus which should be considered according to personal preference of the writer are the length of the pin and the sharpness of the pin.

Large Handle Stylus (APH)
Small Handle Stylus (APH)
Jumbo Stylus for creating Jumbo braille (Howe Press)
Pencil Stylus with Teflon Eraser (Howe Press)
Reversible Stylus with Teflon Eraser (Howe Press)
Safety Stylus (RNIB) with a shield to cover the point when not in use

Erasers



It is important to strive for accuracy in writing braille since every dot is important. However, when errors are made, unnecessary and/or incorrect dots can be flattened with a fingernail or a braille eraser. The choice of tool depends on the readability and neatness of the correction which can be made with it and on the individual.

Plastic Erasers (APH)
Wooden Erasers (APH)

Braille Paper, etc.

Paper comes in different sizes, colors and weights, with or without punched holes for notebooks.

The way in which the paper is being used determines the size and kind of paper needed. It is important to use paper which fits the slate. For instance, a 4 line 28 cell pocket slate accommodates paper that is 8 1/2" wide. On the other hand a braillewriter or 40 cell slate can easily accommodate 11" x 11 1/2" braille paper which may be easier to use for charts and longer projects.

Care must be taken when writing on paper that is punched for notebooks so that dots are not written in the area of the holes. Also, it must be remembered that the holes are placed on the right side of the slate so that when the paper is turned over for reading, the holes are on the left side ready for insertion in a notebook.

Paper weight is determined by the use to be made of the written product. Handwritten reference material, which is to be read many times, probably would require a firmer, heavier paper than notes which may be read one time only. Very young children who have not developed finger and wrist strength for writing on heavier paper may want to use lighter weight paper. A student working in a classroom with other people can use double sheets of typing paper to eliminate much of the noise which results from slate writing. Braille paper comes in brown, buff and white. Personal preference and the purpose of the written product determine the selection.

Paper quality can be judged by the sharpness of the dot (the stylus makes holes in some papers resulting in fuzzy dots) and the durability of the dot (some papers mash down resulting in dots that are too flat to be read easily).

Brown Glaze Paper (lightweight)
Nonpunched, in various sizes (APH)

Manila Braille Transcribing Paper (heavyweight) Punched and nonpunched in various sizes (APH)

Braillon plastic (lightweight, washable, especially good for recipes) (APH)

Here are some new addresses for students to add to their card files or resource lists:

(Exercise BB3 on tape)
Telesensory Inc. (TSI)
455 N. Bernardo Ave.
Mountain View, CA 94039

Duxbury Systems Inc.
435 King St.
P.O. Box 1504
Littleton, MA 01460

Raised Dot Computing
408 S. Baldwin St.
Madison, WI 53703

Blazie Engineering
105 E. Jarrettsville Rd.
Forest Hill, MD 21050

RNIB (Royal National Institute for the Blind)
P.O. Box 173
Peterborough PE2 6WS, United Kingdom

(American distributor for some RNIB products):
Independent Living Aids
27 East Mall
Plainview, NY 11803

National Braille Association
3 Town Line Circle
Rochester, NY 14623

CSS Associates, Inc.
69 Main St.
P.O. Box 41
Cherry Valley, MA 01611

Appendix

ACTIVITIES FOR HAND AND ARM STRENGTHENING
in Preparation for Braillewriting

by
Tobey T. Burton, OTR/L

Braillewriting requires a great deal of strength in the fingers, wrists, arms, and shoulders. In fact, the primary force comes from the shoulders. The act of brailling in itself also demands endurance from the muscles and joints when they are required to repeatedly contract and maintain co-contraction for pushing. This is the reason activities that will help build strength and endurance have been included.

It is not necessary or even desirable for a student to do all these activities, but make sure that when an activity is chosen, especially one for adults, it matches the individual. For example, some adults will not like working with playdough but they will enjoy making something with clay. Motivating the student should be a primary consideration when deciding or, even more important, letting the student decide which activity to use. Having an understanding of the purpose of producing a product can motivate an individual who requires strengthening to do an activity.

CAUTION

Before beginning a program for strengthening, always check on any pre-existing conditions such as arthritis, carpel tunnel syndrome, existing contractions of the joints, and abnormal muscle tone such as spasticity. If these are present, these activities may cause more damage to the muscles and joints. Check with a physician for any precautions that need to be observed.

Activities for strengthening the fingers and wrists:

1. Working with marbles and modeling clay.
   a. Push marbles into clay, one at a time.
   b. Find marble in clay with fingers and work marbles out.
   c. Roll clay into balls on a board slanted at a 45 degree angle to improve wrist extension for using a stylus.
2. Pulling hook and loop material apart or pulling a tennis ball off the hook material.
3. Pushing clay into molds or cookie cutters.
4. Using small finger "therabands," which are available through therapy catalogues.
5. Squeezing "belly" balls.
6. Squeezing a hand exercise apparatus, such as those available at sporting-good stores.
7. Lacing material or shoes together.
8. Using various types of tongs to pick up a variety of objects.
9. Using only one hand to manipulate coins from the palm of the hand to hold between your thumb, index finger, and middle finger to put in a slot in a coffee can cover.
10. Pushing a coffee stirrer into a slit in a can lid.

11. Using modeling clay and pinching off pieces to build a pot.

12. Hammering nails into soft wood (pine), using a comb to hold the nails.

13. Pushing golf tees into clay or styrofoam.

14. Using an old-fashioned manual typewriter.

15. Playing individual piano keys while keeping fingers slightly curved and moving softly across keys.

Activities for strengthening the arms and shoulders:

1. Cooking which requires stirring stiff, heavy batters like those for cookies or bread.

2. Pulling taffy.

3. Pulling scarfs out of a coffee can through a small slit cut in the plastic lid.

4. Pulling rope through a small hole in a board.

5. Pulling or pushing heavy loads.

6. Carrying groceries and lifting gallon milk containers, 2-liter bottles, etc.

7. Doing isometric exercises such as pushing against a wall.

8. Doing exercises with a partner whom you push against.

9. Sanding with a block sander in one hand and stabilizing the wood in the other.