Pre-Kindergarten Nemeth Braille Code Curriculum
Module 6: Nemeth Numerals 0-10
Teacher Reference Materials

Prerequisite skills:

- Ability to use rote counting number words in order
- Ability to verbally count objects
- Ability to tactually identify the numeric indicator and the numerals 1-9
- Ability to write the numerals 1-9
- Ability to put the numbers 1-9 in order

Math symbols and concepts, including braille knowledge, addressed:

- Counting
- Numeric indicator
- Numerals 0-10
- Concepts of "before" and "after"
- Numerical order

Objectives:

The student will be able to:

1) Tactually identify the numerals from 0-10
2) Use the Accessible Equation Editor and/or braillewriter to write the numerals 0-10
3) Represent a number ranging from 0-10 by producing a set of objects with concrete materials and Nemeth numerals
4) Use number cards in order and then determine what number comes before or after a specific number from 0-10 in Nemeth Code only
5) Place numbers 0-10 in order

Other ECC skills addressed:

Listening skills; concept development; following directions; tactual discrimination; left-to-right tracking; taking turns; hand positioning; light touch (as opposed to scrubbing)

Teaching tips:

- This module should be completed across multiple sessions.
- Note that the beginning tracking activities are emphasizing the shape of the numeral.

- It may also help to place the flash cards and hard copy braille on a nonslip surface such as rubber shelf liner so they will not move as the student is reading.
- When you introduce the numeral 0, explain that it means no objects in this activity.
- If you would prefer, the student can stomp a foot whenever he/she finds a numeral. This option will allow the student to keep his/her fingers on the line of braille.
- If you are using hard copy braille, the student may also underline or circle the answer with a grease marker or crayon. Placing a small sticker on top of the answer is another option.
- As previously mentioned, the swing cell from the American Printing House for the Blind provides a concrete model of the relationship between the dots in a braille cell and the keys on a braillewriter.
- Using the braillewriter for some of the writing activities is encouraged as it facilitates the development of motor memory.
- It is very important to use the correct finger on each key when learning new Nemeth symbols. This will help the student become accurate in their writing!

Materials/technology needed:

- Accessible Equation Editor and/or braillewriter
- 2 swing cells and pegs
- Braille paper
- Index cards
- Brightly colored construction paper
- Unifix cubes (or other cubes that can be snapped together)
- Bin or bucket
- Glue stick or glue
- Textured paper/material/small objects
- 6 bowls
- Outline/pattern of train cars from Texas State Library https://www.tsl.texas.gov/ld/projects/trc/2008/manual/bil_trains.html#_Color_Train

Optional materials for follow-up activities or adaptation of activities:

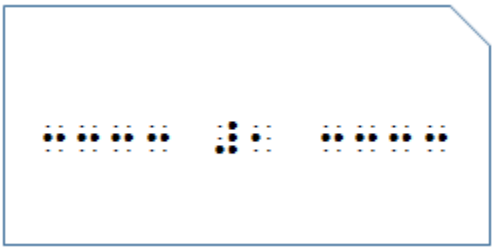
- Scented stickers, Wikki sticks, buttons, or textured paper
- Two ½ dozen muffin tins and 12 small balls
- Book made of poster board or cardboard
- Variety of small objects

- Hook and loop sticky-back strips and circles of Velcro so the circles will connect to the strips

Explanation of activities embedded into module:

1) If you do not have two swing cells, use two ½ dozen muffin tins with tennis balls for an easy way for the child to "build" the Nemeth numerals. Another variation would be to use a ½ dozen egg carton or a dozen egg carton cut in half with plastic eggs or golf balls.

2) Create flash cards with the index cards. Cut out the upper right corner for easy identification of orientation. Make five flash cards for each numeral. Use lines of dots 2-5 for leading in and away from the numeral. See below for an example.



The flash cards will be used to practice reading numerals at first. Give the student one number card at a time. Make sure that it is oriented with the cut out corner at the upper right. Some of the flash cards will also be used to put the numbers in order in this module.

3) The student will create sets of objects to match numerals from 0-5. The student will need 6 bowls, number cards from 0-5, and an assortment of small objects. Before beginning the activity, explain that 0 means no objects in this activity. Also explain that when he/she draws the numeral 0, he/she will not place any objects in the bowl. It will remain empty.

   This activity can easily be completed with the student and one of his/her friends (or you, if no other students are present). Begin the activity by having the student shuffle the number cards. Have the student draw a number card and place that many objects in the bowl. Continue the same process until all of the number cards have been used.

   Afterwards have the student arrange the bowls in a straight line and shuffle the number cards again. Then have the student place each

number card in front of the bowl that contains that many objects. If needed, remind the student to place the number card 0 in front of the bowl that is empty.

4) For this activity, the student will need flash cards from 0-10 and Unifix cubes or other cubes that can be snapped together. If you do not have the Unifix or snap cubes, you can also use MegaBlocks, Legos, or teddy bear manipulatives designed for preschoolers.

   The student will draw a card and then read the numeral. Afterwards he/she will build a train using that number of Unifix cubes or other cubes that can be snapped together. This activity can easily be completed with the student and one of his/her friends (or you, if no other students are present). The students should take turns drawing a flash card and building a train!

5) Create a tactual numeral page that can be displayed or taken home. The student will need a sheet of braille paper or brightly colored construction paper, a braillewriter, and ten objects that remind him/her of a train! The student will write 10 in Nemeth. Then, the student will glue ten objects onto the paper!

6) You will need flash cards with numerals written from 0 to 10 on them. Then have the student shuffle the flash cards. Afterwards have the student place the numbers in order from 0 to 10.

   If needed, provide the student with a hard copy of numbers in order to use as a model. It may also help to place the flash cards on a nonslip surface such as rubber shelf liner so they will not move as the student reads the cards. You may also use a strip of sticky back Velcro on the back side of each flash card and then arrange the flash cards on a long strip of Velcro on the student's desk. You and/or the student can also paste the flash cards in place on a large piece of construction paper when they are correctly laid out.

7) Continue to make a number train. The student will need: railroad cars with numerals 1-9 from the last module, brightly colored construction paper or braille paper cut into train car shapes, glue stick, and braille numerals 0 and 10 on small cards. First, have the student find the numeral 0 and glue it onto a railroad car. Then, have the student find the numeral 10 and glue it onto another railroad car. Then have the student put the railroad cars in order from 0 to 10.

If you would like, the student can "decorate" the railroad cars with scented stickers, Wikki sticks, buttons, or textured paper. Feel 'n Peel Sheets: Carousel of Textures (catalog number 1-08863-00) from American Printing House for the Blind has a variety of adhesive backed and non-adhesive backed textured paper.

It may help to place the railroad cars on a nonslip surface such as rubber shelf liner so they will not move as the student reads the numbers. You may also use a strip of sticky back Velcro on the back side of each railroad car and then arrange the railroad cars on a long strip of Velcro on the student's desk. You can also paste the railroad cars in place on a large piece of construction paper when they are correctly laid out.

Encourage verbalization of the names of the ordinal positions such as first and second while the children work. Use this activity to reinforce counting as well.

8) Create a counting book from 1 to 10 by using objects that can be easily counted like one smooth button, two birthday candles, three foam triangles, four keys, etc. The student will need: book made of poster board, a variety of small objects, glue stick, sticky-back strips of Velcro, sticky-back circles of Velcro, and braille numerals 1 through 10 on small cards. If preferred, you can use a book made of cardboard from a craft store instead of poster board. (We are deliberately starting at 1 since the counting numbers start at 1. You are welcome to add 0 should you choose to make a number book instead.)

   It may help to place the book on a nonslip surface such as rubber shelf liner so it will not move as the student is reading. It may also help to use bowls or a sorting tray to keep the assortment of small objects organized.

   Velcro is recommended so that the student can take the objects out of the book easily when counting! Removable objects can also be changed by the child to easily create a different counting book. If preferred, you can use hot glue instead of Velcro to attach the objects.

   More information about making counting books is available on the Paths to Literacy website (www.pathstoliteracy.org) and in Beginning with Braille: Firsthand Experiences with a Balanced Approach to Literacy by Anna Swenson from AFB Press (www.afb.org/store).

The student will begin by finding the numeral 1 and attaching it onto the upper left corner of the first page of the book. Afterwards, he/she will find the numeral 2 and glue it onto the upper left corner of the next page. Continue to find the numerals in order and then glue each numeral onto the upper left corner of a different page. Once the student has finished locating and gluing the numerals onto the pages, attach a Velcro strip horizontally in the middle of each page. For the pages with numerals 6-10 on them, attach a second Velcro strip slightly below the first Velcro strip.

Next decide which object will be used with the numeral 1 and then glue a Velcro circle onto the back of the item. Then attach the item with the Velcro circle onto the long Velcro strip on the page with the numeral 1. Complete the same process for all of the numerals.

Then have fun reading and counting the objects in your counting book!

Materials Commercially Available:

American Printing House for the Blind sells the swing cell. The catalog number is 6-78041-00.

Additional materials that could be used from the American Printing House for the Blind (www.aph.org) include

- Feel 'n Peel Sheets: Carousel of Textures (1-08863-00)
- Hundreds boards and Manipulatives Kit (1-03105-00)
- FOCUS in Mathematics Kit, Second Edition (with print Teacher's Guide 1-08280-01, with braille Teacher's Guide 1-08281-01)
- Small Work-Play Tray with Dividers (1-03751-00, 1-03770-00) *also available within the FOCUS in Mathematics Kit*
- Textured sorting Circles and Shapes (1-08834-00)
- MathBuilders Unit 1: Matching, Sorting, and Patterning (with print Teacher's Guide 7-03560-00, with braille Teacher's Guide 5-03560-00)
- *Picture Maker Wheatley Tactile Diagramming Kit (1-08838-00) *Many of these objects and a blue felt board are also available in the*
- *MathBuilders Unit 1 and the FOCUS in Mathematics Kits mentioned above.*
- *Feel 'n Peel Stickers: Nemeth Braille-Print Numbers 0-100 (1-08876-00)
- *Feel 'n Peel Point Symbols or Stars (1-08846-00; 1-08868-00; 1-08867-00)

  * *WARNING: CHOKING HAZARD -- Small Parts. Not intended for children ages 5 and under without adult supervision.*

Fun Facts from:

1998 DK Publishing Book entitled *The Big Book of Trains* edited by Jane Yorke.