

HOW TO MAKE AN EYE GAZE TRANSFER DISPLAY (E-TRAN)

Juan Bornman

An E-Tran is a communication display which is accessed by eye gaze and is a suitable option for individuals who have to rely on their eyes to select an option. It is particularly useful for individuals with severe motor impairments (e.g. individuals with locked-in syndrome (LIS) or individuals with degenerative motor skills such as upper motor neuron disease, or children with some forms of cerebral palsy. Eye gaze systems are also often very useful in intensive-care settings (van der Walt, 1995) as immediate access to communication is often of vital importance in this setting. *(Please refer to section 3.2 in Chapter 3 of this manual for more information on the use of an E-Tran in the hospital setting).*

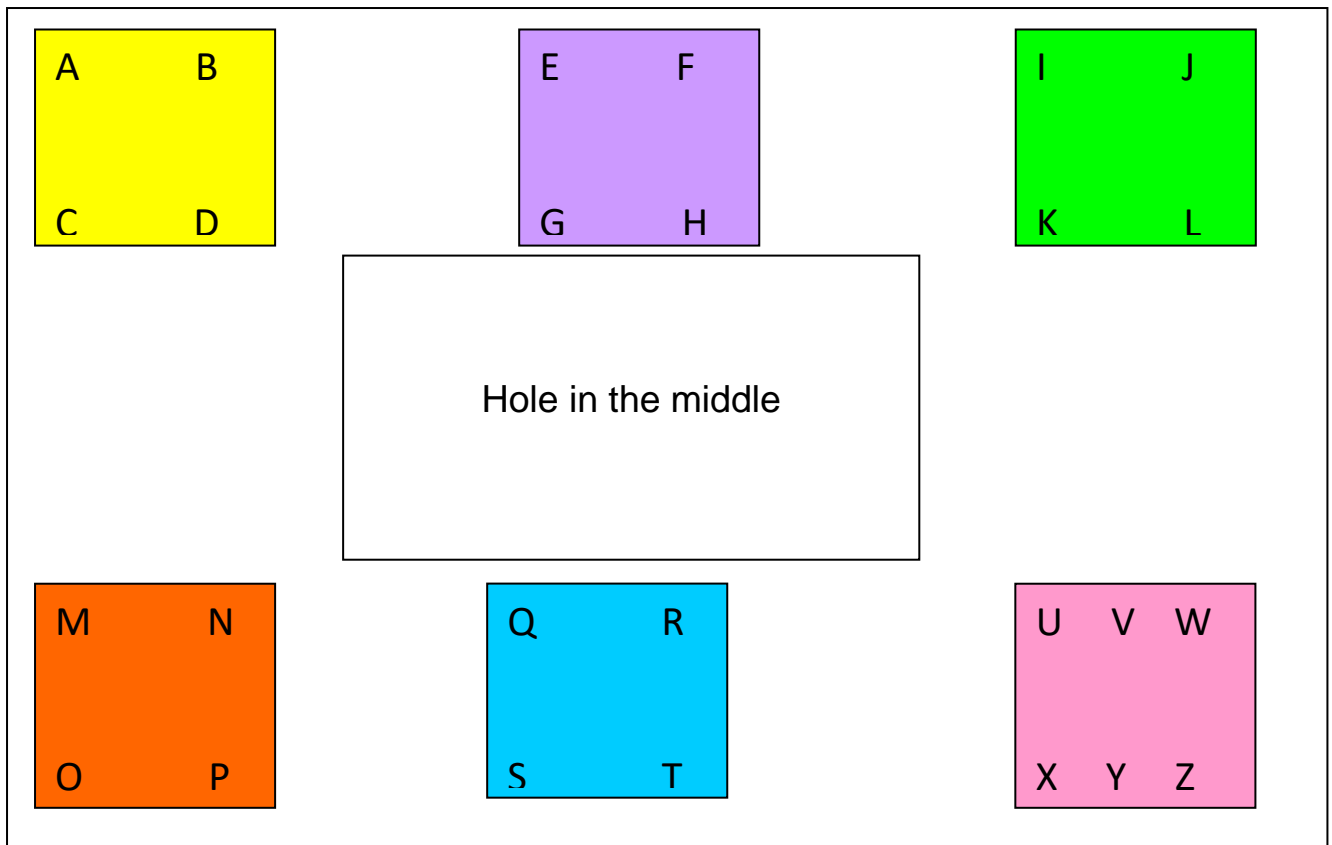
An E-Tran is usually made from a piece of see-through Plexiglas (Perspex) with the center cut out, enabling a person who uses AAC to sit across from a partner and send a message by gazing at the symbols (Lloyd, Fuller & Arvidson, 1997). The symbols are then spread out on the board and attached with Velcro (see Picture 1 for an example). The size of the E-Tran depends on the user's accuracy of gaze, but usually varies between a regular A4 size and the larger A3 or A2 sizes. A low cost option is to use PVC piping with 90° connectors at the 4 corners to form the frame. The symbols can then be placed on the frame with Velcro. Usually this is effective for children who are beginning to learn how to use the E-Tran, as it is suggested that no more than 4 symbols are placed on the frame (one on each of the sides)(Picture 2). Similarly, a wire coat hanger that is bent to form a diamond-shape can be used. The symbols are placed in distinctly different locations, and thus the communication partner can identify the intended symbol selection by judging where the person who uses AAC focuses (Picture 3).

There are several eye-gaze strategies but the most commonly used one will be described. This strategy uses a combination of eye-gaze and auditory scanning, and works as follows:

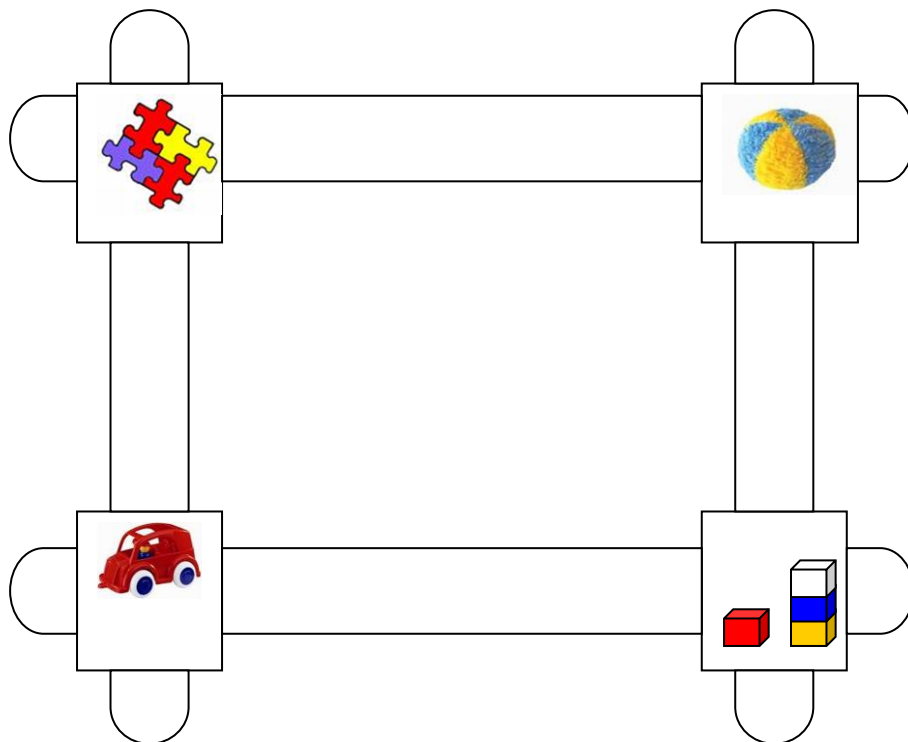
- To communicate, the user looks at the group of letters containing the target letter (e.g. the upper left-hand corner for D) and then looks back through the center of the board.
- The partner reads aloud the items in that group, and when the partner says the target letter, the user gives a prearranged signal, such as looking up, blinking or briefly closing his eyes.
- The partner repeats the letter and writes it down.
- The user then looks at the letter group containing the second letter and the procedure continues until the message is complete.

Instead of letters of the alphabet, short phrases, graphic symbols or even objects can be used on the E-Tran. Price (1998) developed a three-dimensional E-Tran frame for developmentally young children. The frame is made from construction toy material and objects can be arranged on it to suit individual needs

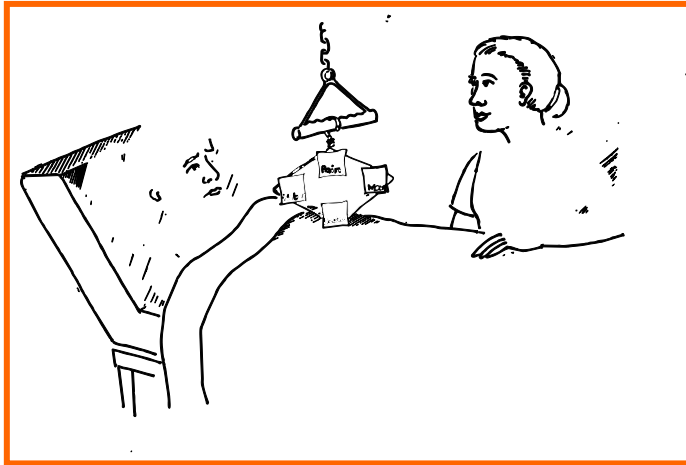
Picture 1: Example of traditional E-Tran with alphabet encoding



Picture 2: Example of a low cost E-Tran made with PVC piping.



Picture 3: Example of an E-Tran (coat hanger) for the intensive care setting



Useful websites

The following video demonstrates the use of an E-tran:

E-tran instruction video: <https://www.youtube.com/watch?v=lfLuqGaxaz4>

References

- Lloyd, L., Fuller, D.R., & Arvidson, H.H. (Eds.). (1997). *Augmentative and Alternative Communication: A handbook of principles and practices*. Boston: Allyn & Bacon.
- Price, K. (August 26, 1998). *A 3 dimensional E-TRAN frame for developmentally young children*. Poster presentation presented at the 8th Biennial conference of the International Society for Augmentative and Alternative Communication, Dublin, Ireland.
- Van der Walt, R. (1995). *Improving Communication rate for a Guillain-Barre patient in an intensive care unit setting - the use of a specific encoding technique*. Unpublished Master's thesis, University of Pretoria.