COMMUNICATION IN MND AND OTHER NEUROLOGICAL DISEASE

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> Quiet people have the loudest minds.

Stephen Hawking

OVERVIEW

- Definition
- Use cases
- Assessment & Management
- 4 low-tech methods
- 3 high-tech methods

USE CASES

- Spinal cord injury
- Parkinson’s disease, motor neurone disease
- Cerebral palsy
- Postoperative (glossectomy, laryngectomy)
- ICU setting

ASSESSMENT

- Cognitive
- Language
- Motor
- Sensor

MANAGEMENT

- Needs
- Situations
- Adaptation

LOW-TECH METHODS

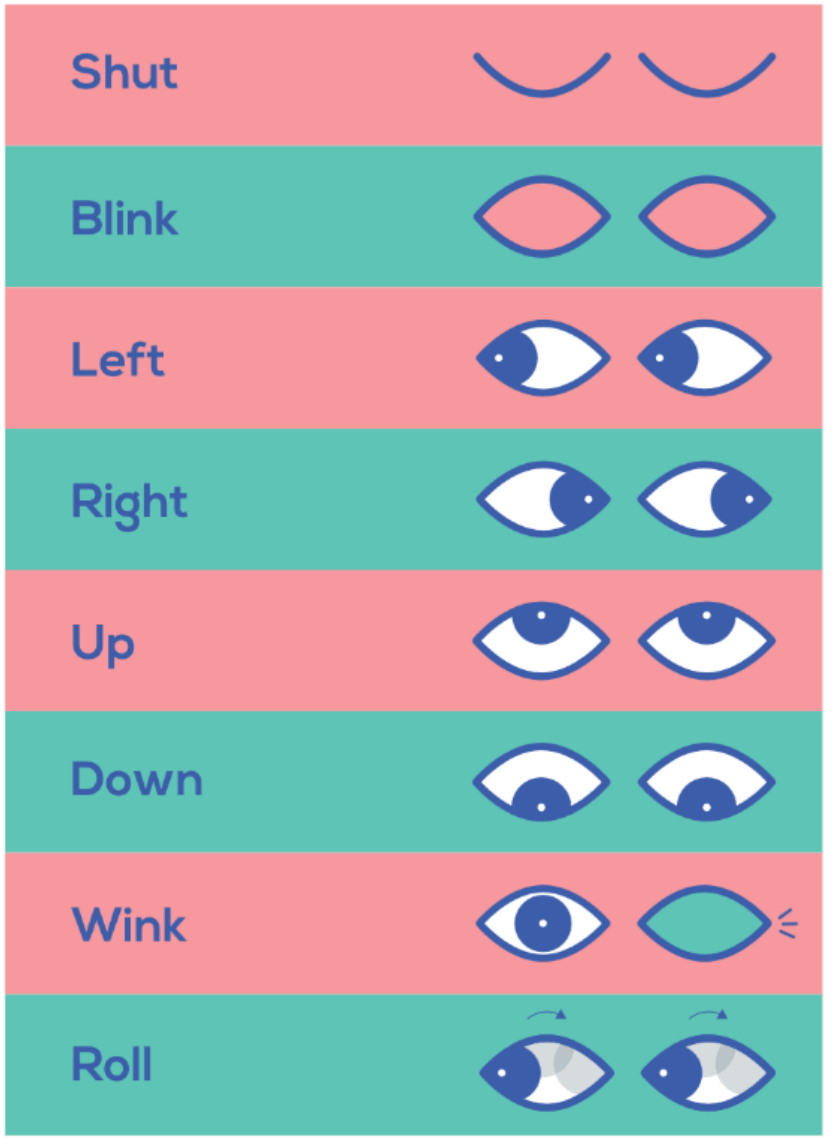
- Blink to speak
- Partner assisted scanning
- Eye transfer boards
- Eye link

BLINK TO SPEAK

Asha Ek Hope Foundation for MND/ALS, India

BLINK TO SPEAK

The alphabets of Blink To Speak



BLINK TO SPEAK

Long hold
of shut eyes

Start
Stop

Furious
blinking

Wrong

BLINK TO SPEAK

1 Left
1 Right

A

B

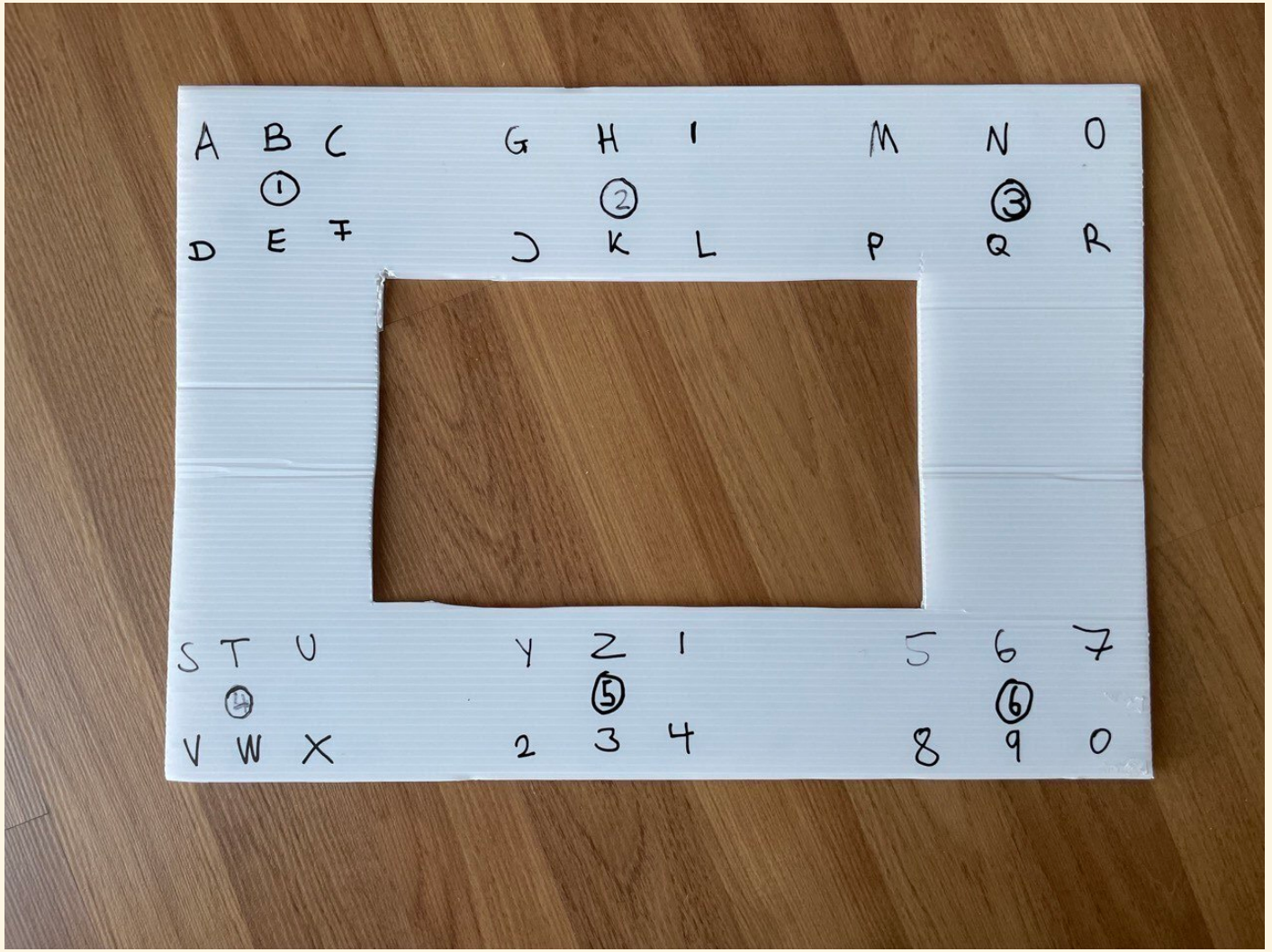
Water

1 Up

Toilet

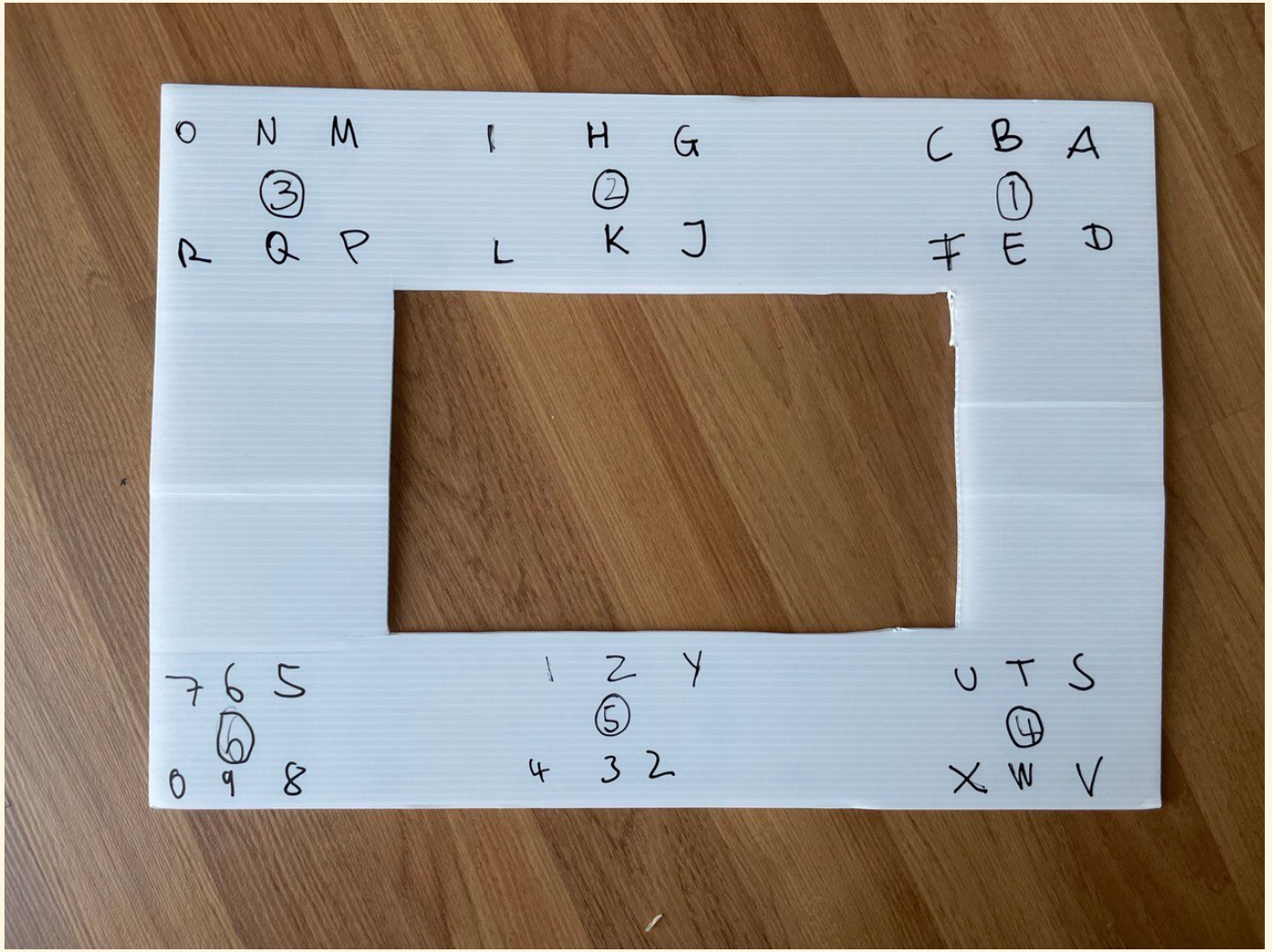
EYE TRANSFER (E-TRAN) BOARDS

FRONT



EYE TRANSFER (E-TRAN) BOARDS

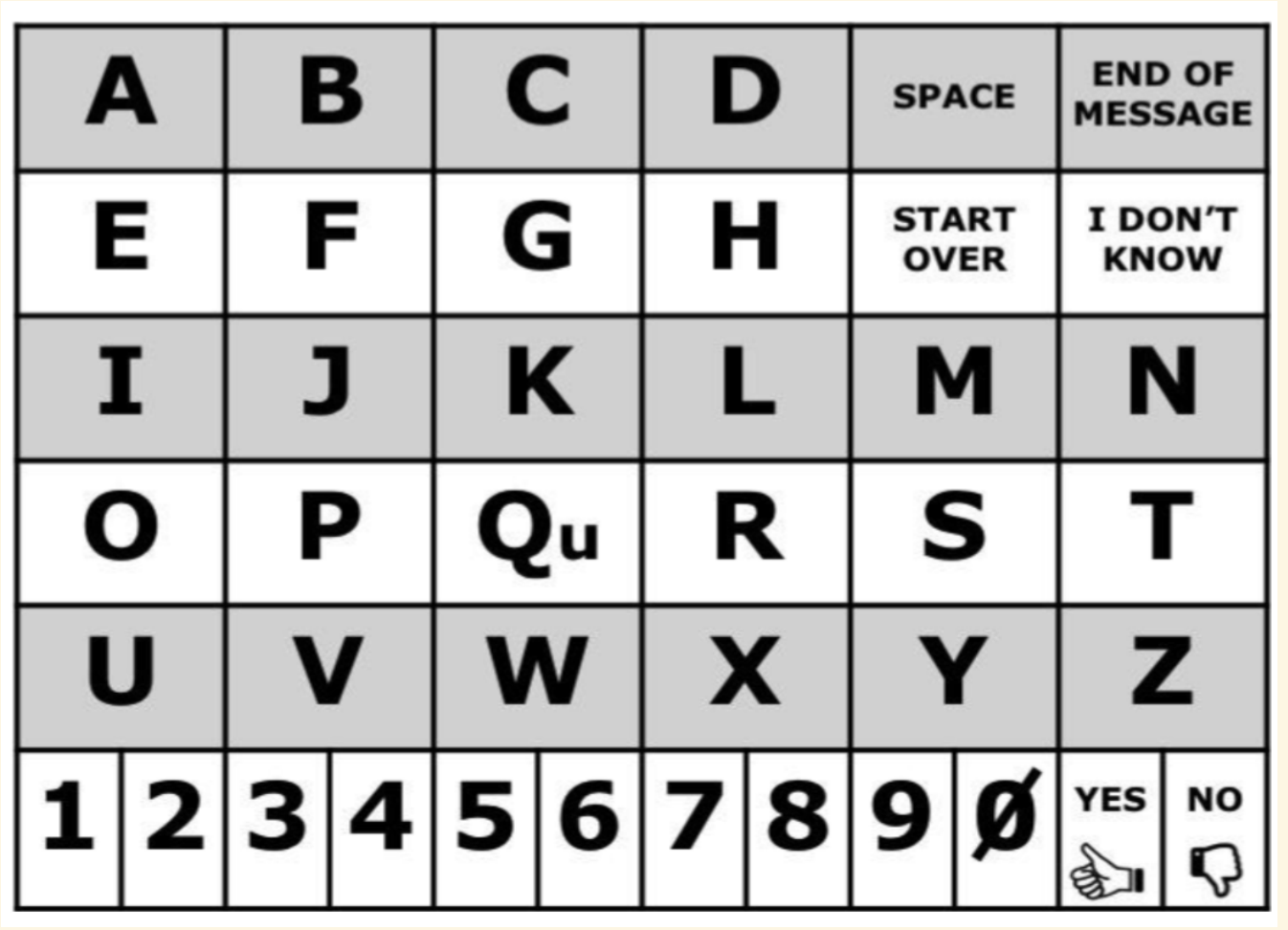
REVERSE



EYE LINK METHOD

https://www.youtube.com/watch?v=zdTeVwTXjxI

PARTNER ASSISTED SCANNING



https://www.patientprovidercommunication.org/download/library/covid-19-free-tools/letter-boards-52.pdf

HIGH TECH METHODS

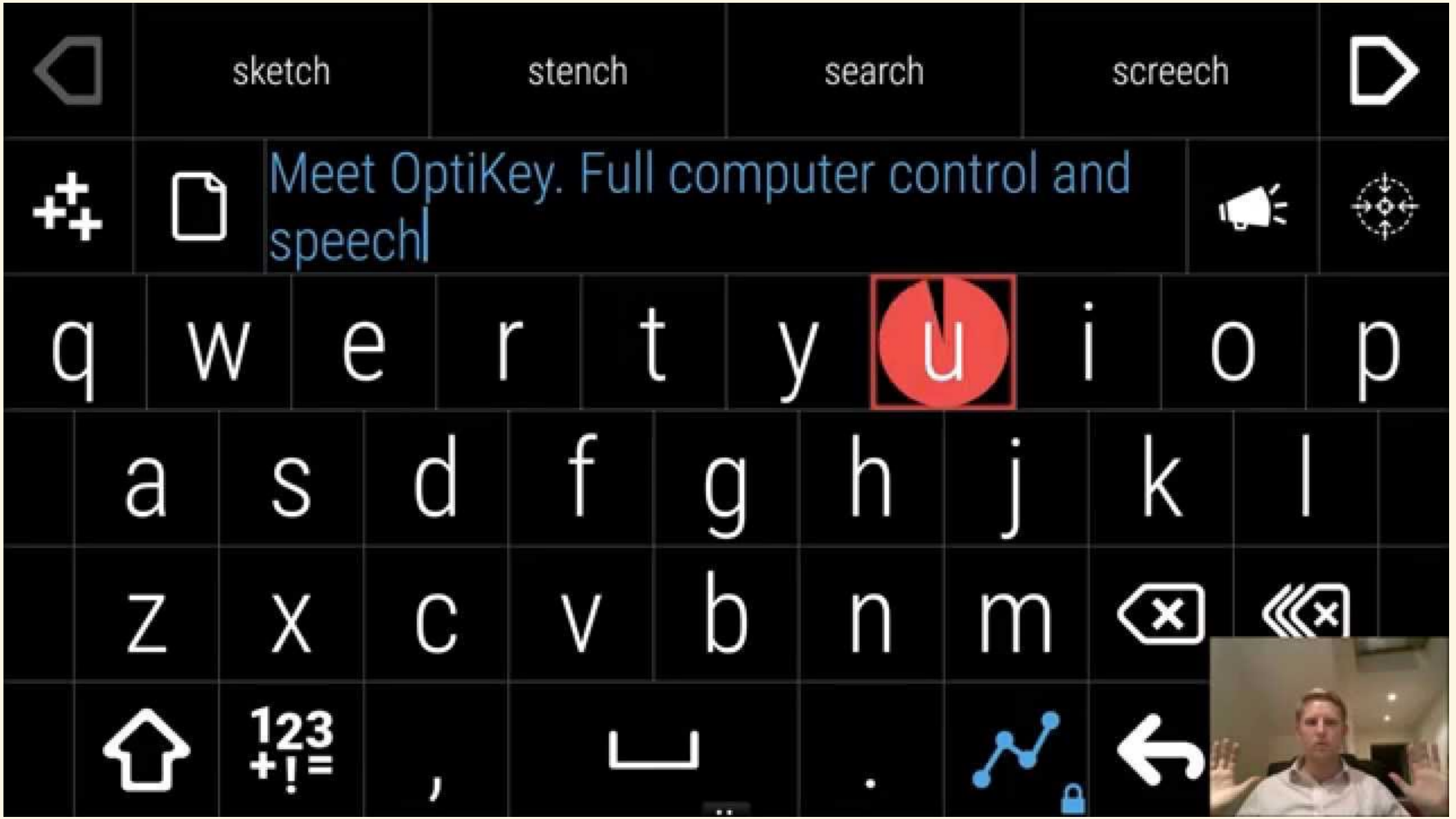
- Eye trackers
- Switches
- Accessibility features in devices

TOBII EYE TRACKER

EYE TRACKER

sibu
sibling
sic
sin
I like sibu
Zzz
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
tobii
PROPERTY OF PERSATUAN PENYAKIT MOTOR NEURON MALAYSIA (MND MALAYSIA) Tel: +6017.883.8839

OPTIKEY


sketch
stench
search
screech
Meet OptiKey. Full computer control and speech
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
123
+!=

OPTIKEY

- Open source
- Free to download
- Allowing desktop control, mouse clicks

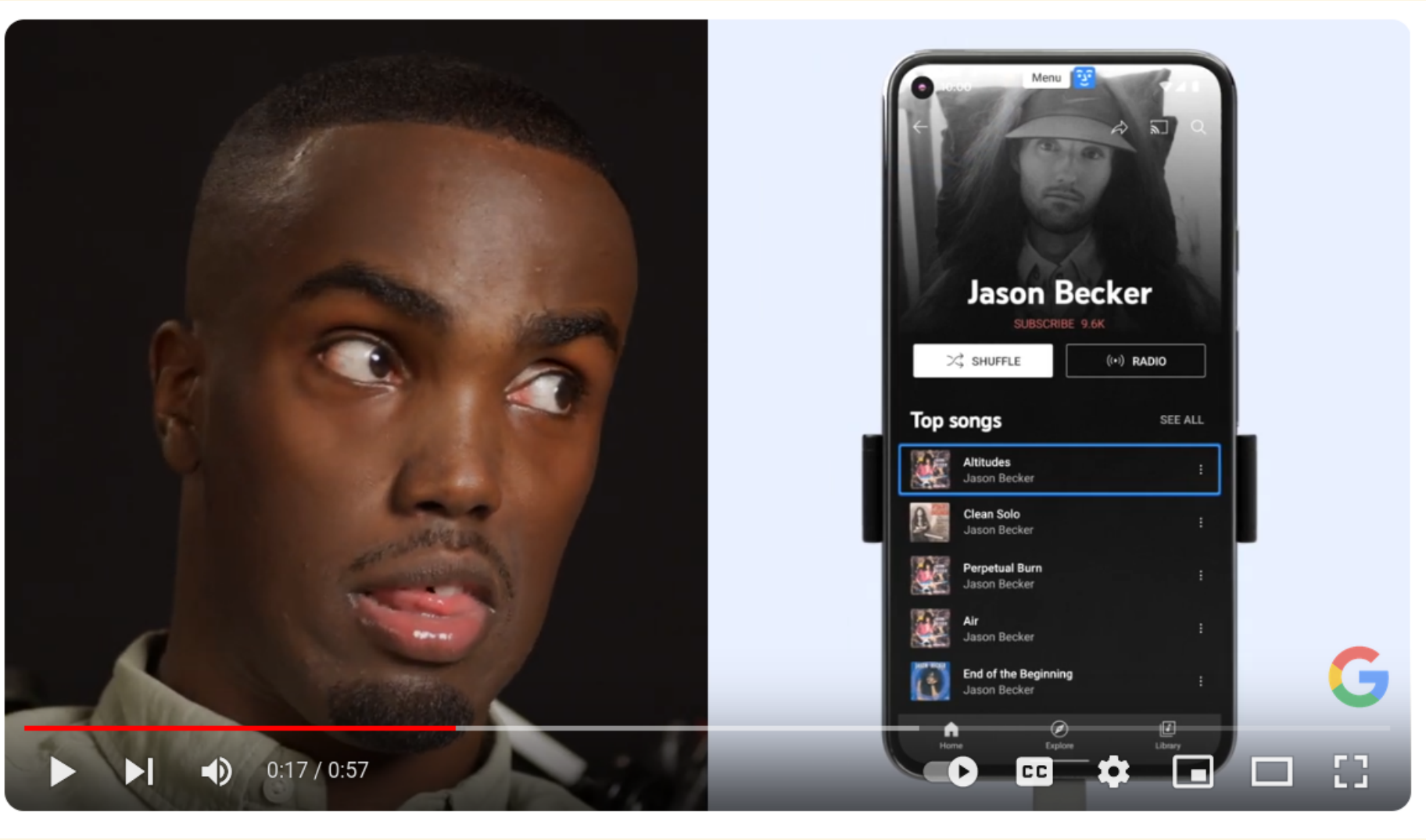
LOOK TO SPEAK

https://experiments.withgoogle.com/looktospeak

ANDROID SWITCH ACCESS

- Integrated with Android
- Front-facing camera detects gestures
  - Look left, right
  - Raise eye-brows
  - Smile

ANDROID SWITCH ACCESS



YouTube

FABI LOW COST SWITCH ACCESS

FABI SWITCH + 💻

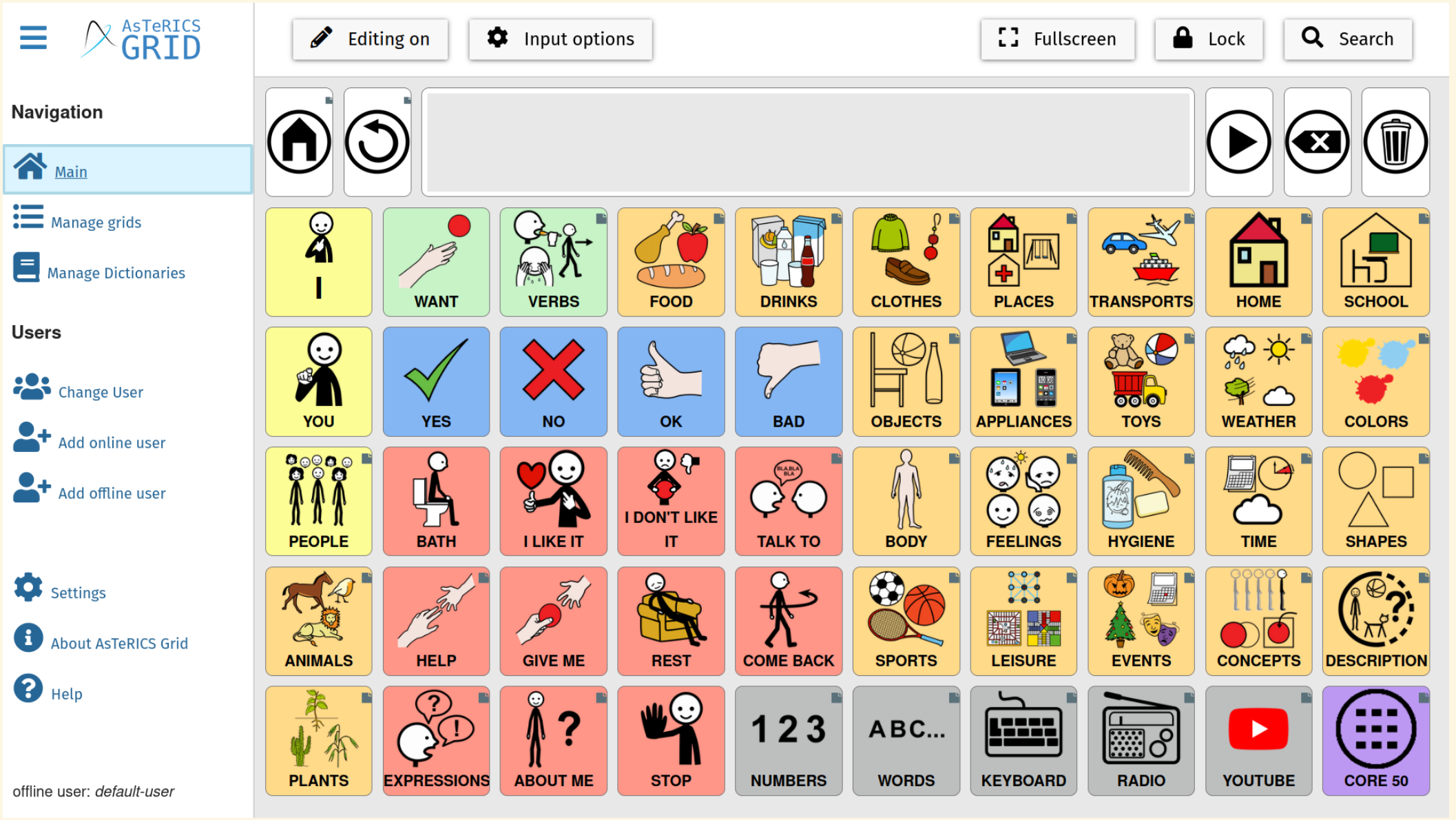
FABI SWITCH + 📱

FABI SWITCH + IPAD

COST OF A SWITCH SETUP

- Arduino 32U4 microcontroller: ~ 35 RM
- 100 g PLA filament for 3D printing: 5 RM
- Wire, solder etc.: 10 RM

ASTERICS GRID



ASTERICS GRID

- Runs in browser
- Speech synthesizer
- Letters, numbers, icons
- Radio control
- Highly customizable
- FOC

MND MALAYSIA

https://mndmalaysia.org/en_gb/

REFERENCES

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THANK YOU