

Wheelchair to Walker: Educators and SLPs are Encouraging Hands-Free Walker Mobility for Children with Complex Communication and Physical Needs

USSAAC
THE VOICE OF AAC

Christine Wright Ott, MPA, OTR/L
The Bridge School, Hillsborough, California USA



Peer Interaction through mobility

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- Microphone is muted
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- Participant form and instructions on USSAAC website

NOTE: You need to scan and send participant form to smeehan8@ku.edu by September 23rd, 2020

Christine Wright Ott

MPA, OTR/L



No financial or non-financial disclosures to report.

An occupational therapist with more than 35 years of experience.
Currently in private practice

- ❑ Consultant at The Bridge School in Hillsborough, California.
- ❑ Author and principal investigator of 2 Department of Education (NIDRR funded) grants: “*Transitional Ortho-therapeutic Walker (TOTWalker) for Preschool Children with Cerebral Palsy,*” and the “*Transitional Powered Mobility Aid*” (TPMA)
- ❑ California Children’s Services, a High Tech Center (former Rehabilitation Engineering Center at Children’s Hospital at Stanford University)
- ❑ Frequent lecturer at national and international conferences (ISAAC, ATIA, CTG, ISS, AAC by the Bay)
- ❑ Author (3rd through 7th editions) of “Mobility” in *Occupational Therapy for Children and Adolescents*.

Learning Objectives

1. Describe 3 beneficial outcomes (physical, psychological or social) a child with a physical disability and complex communication needs can experience using a hands-free support walker.
2. Describe 2 recess or classroom activities students with complex communication and physical disabilities can accomplish using a hands-free support walker.
3. Identify an AAC system/strategy for students in support walkers to encourage interactions with peers.

Wheelchair to Walker: Educators and SLPs are Encouraging Hands-Free Walker Mobility for Children with Complex Communication and Physical Needs

USSAAC Webinar 9/2020

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cwrightott@bridgeschool.org chriswrightott@sbcglobal.net



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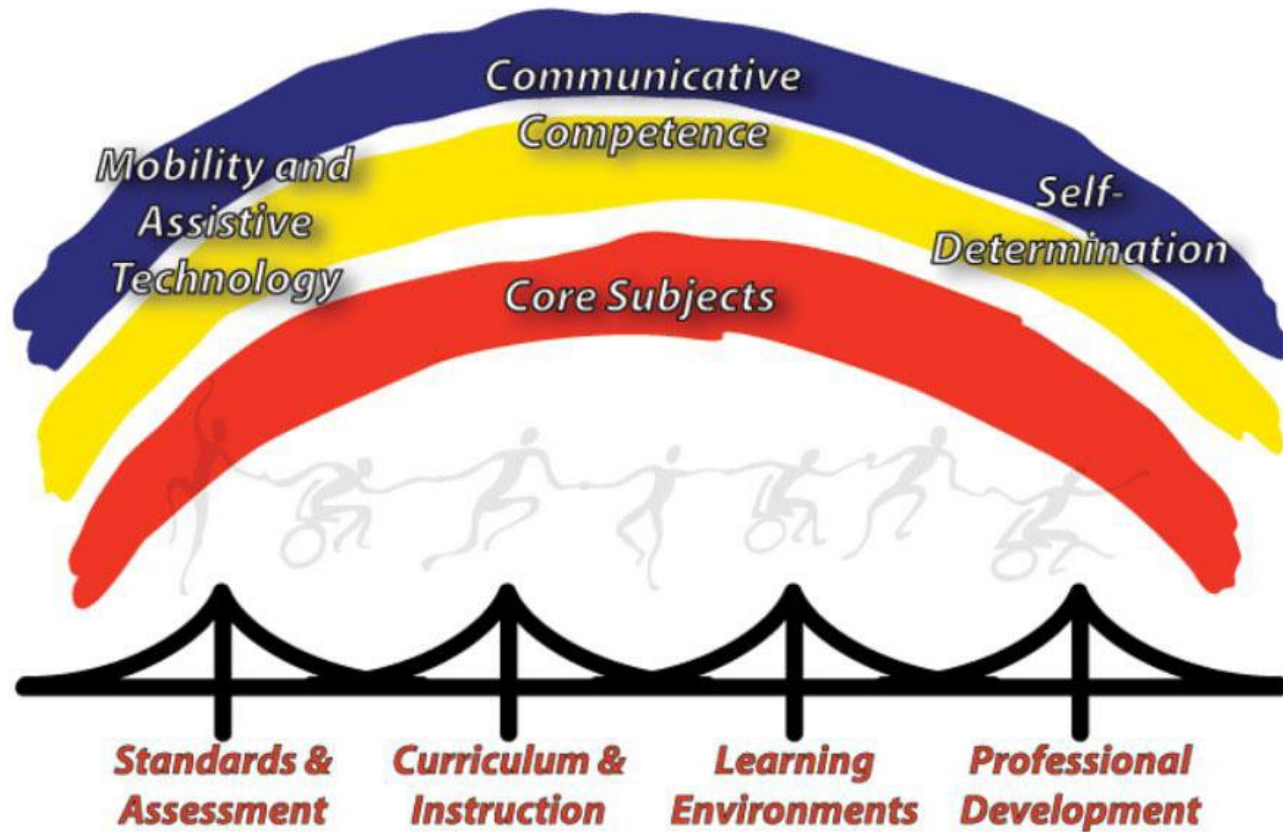
The Bridge School Hillsborough, California



- A small private school on a public school campus.
- It serves preschool and elementary students between ages 3-12 years.
- All students have complex communication and physical needs.

THE BRIDGE SCHOOL

Course of Study



<http://curriculum.bridgeschool.org/>

New module on classroom adaptations for CVI

Hands-free Support Walkers



KidWalk



ProneWalk



Pacer



Mustang



FCI Walker/Winnipeg



Grillo

Mobility and Access Defined

Self-initiated or Self-Directed Mobility

The individual makes the decision to physically move, deciding where, when and how to move.

It provides **ACCESS** to people and objects in the environment.



ACCESS is....

A means of approaching something.

The right to enter and therefore the ability to interact with objects/people.



Twin brothers

A support walker can provide access to objects & people and opportunities to do physical activities.

A typical 3 year old can:

- Move freely
- Rarely stays still
- Reach for objects
- Open/close drawers
- Push & pull toys
- Jump
- Throw and kick a ball
- Walk on tiptoes
- Runs towards
- Run away
- Carry toys
- Play hide & seek
- Climb
- Explore, Interact, Discover & Learn



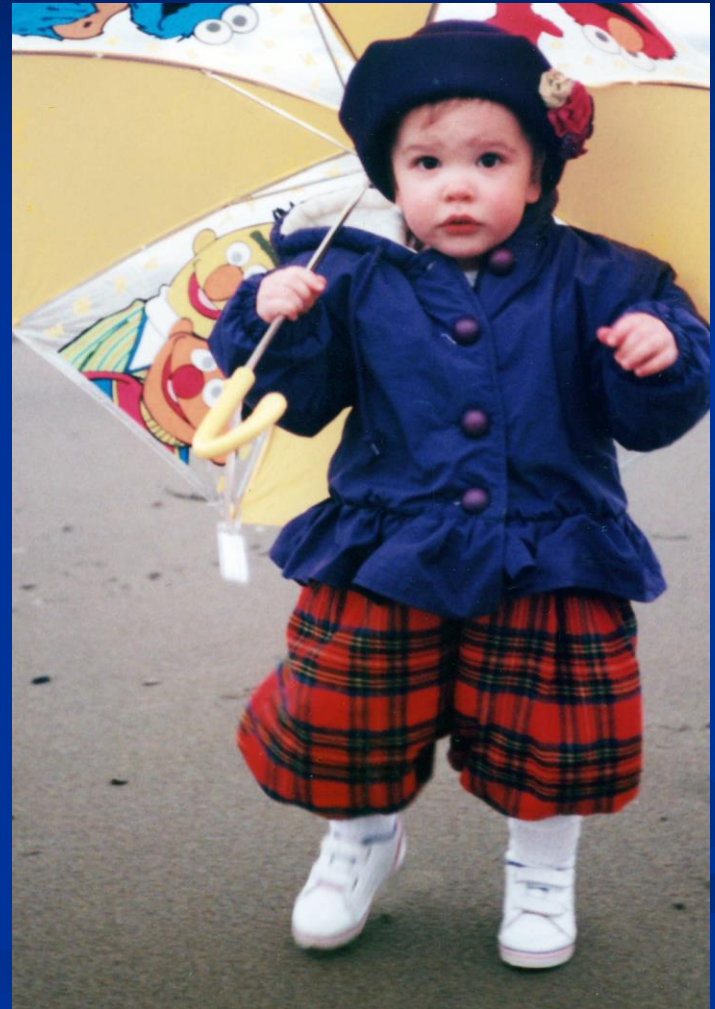
Locomotion in infants is the catalyst for a cascade of developmental changes in the brain.

“Following independent locomotion, in the typically developing infant, there are dramatic changes in:

- **Visual perception,**
- **Spatial cognition**
- **Memory**
- **Social/emotional**

The ability to walk affects how children see, think about and talk about their physical and social environments.”

(Anderson et al. 2013)



Changes in Typically Developing Infants Following locomotion

Wariness of Heights (Fear and avoidance of drop offs.)

Experience with self-produced movement is linked to the onset of wariness of heights.

It is not dependent on maturation, but experience.

(Campos et al., 1978)



Locomotor Infants...

Produce more caregiver-directed vocalizations and gestures.

View distant objects, seek that object and carry and share it with adult.

(Karasik et al. 2011) (Adolph et al. 2012.)

Are more attentive & less distracted. (Clearfield 2008.)

Experience frequent emotional interactions with caregivers.

(Biringen, Emde, Campos, & Applebaum, 1995; Clearfield, 2011; Clearfield, Osborne, & Mullen, 2008.)



Locomotor Experience Affects Language Development

“Language development is accelerated when infants begin to walk.”

(Davies et al. 2012).

“The acquisition of walking is associated with a significant increase in both receptive and productive language, independent of age.”

(Walle, Campos 2014)

“Attainment of walking propels linguistic development.”

(Oudgenoeg-Paz 2012)



Spatial Memory Increases with Locomotor Experience

Study: Spatial Cognition/Spatial Memory in Children with Spina Bifida

(Rivera, 2012.)

Spatial Search Ability : 2 position hiding task with toy hidden in one location.

Results:

Pre-crawlers searched successfully in 14% of trials.
Following onset of locomotion 64% correct search.

Conclusion: Self-produced loco motor experiences/crawling, walking, or using a mechanical walker enhanced performance on spatial search tasks in infants with Spina Bifida.



Self-initiated mobility is brain food!!!!



Self-initiated mobility experiences are necessary for changes in cognitive, psychological, spatial, physical and emotional development. (Anderson et al. 2013)

Self-initiated Mobility Contributes to a Transformation of the Brain

Social Emotional

Memory

Reasoning

Visual perception

Spatial cognition

Problem solving

Sensory motor

Attention/Focus

Perceptual motor coordination

Visual Attention

Postural Control

Language

Communication

Self determination



Active, self-produced mobility has the greatest impact on development & learning

(Anderson et al. 2013)



Dependent Mobility



Self-initiated Mobility

Study:

Locomotion, Active Choice and Spatial Memory in Children

Foreman N, Foreman D, Cummings A, Owens S.
J. Gen Psychol 1990 Jul; 117(3) 354-5



4 and 6 year old children were tested on a their ability retrieve objects that were strategically placed in a large room.

Active Mobility



Independently walking



Pushed in a wheelchair, but child directed the adult

Passive Mobility



Walking led by an adult.



Adult pushed student in a wheelchair.

RESULTS:

The children who had no independent loco-motor experiences or autonomous choice performed poorly.

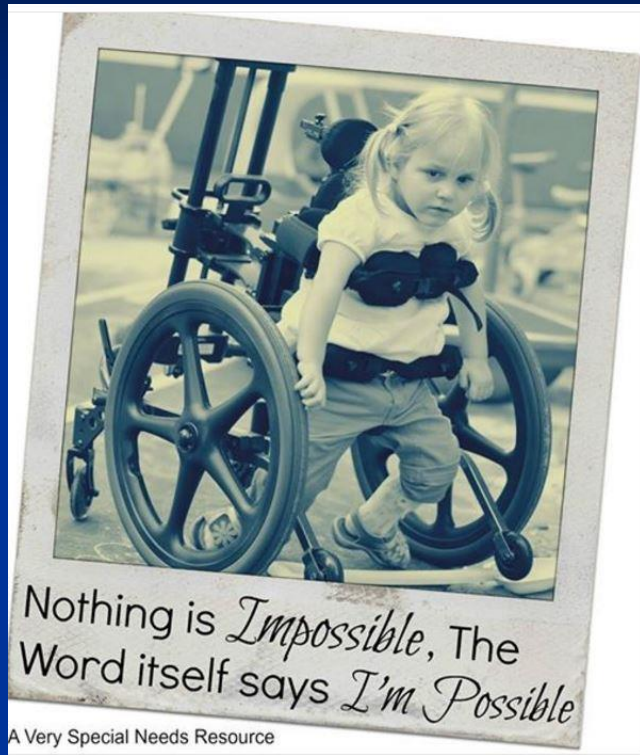
“The results are related to neurobiological models of spatial cognition and may have implications for the transportation of children with mobility problems.”

Foreman N, Foreman D, Cummings A, Owens S.
J. Gen Psychol 1990 Jul; 117(3) 354-5

Passive Mobility



Active, self-initiated mobility is required for the greatest impact on development



Support Walker
(Exercise & Peer Height)



Self Propel



Motorized
(Permobil Explorer Mini)

A support walker can provide a means for exercising and participating with peers at recess & PE.



Everyone needs to exercise

A meta-analysis of 59 studies published over the previous 60 years, found that physical activity has a decidedly positive effect on children's achievement and cognitive outcomes.

(Fedewa and Ahn 2011).



Academic benefits of exercise for children:

Math

Students who exercised 10-20 minutes prior to a math test outperformed students in the sedentary control group. (Howie et al 2015).

Math & Reading

Students assigned a daily schedule with more physical activity breaks outperformed their control-group peers in mathematics and reading.

(Tomporowski 2016)

Reading Spelling Math

A 20 minute session of walking boosted children's subsequent performance on tests of reading, spelling, and arithmetic

(Hillman et al 2009).



Active kids learn better

Research proves that if your kid is physically active they do better at school.



Physical activity **enhances** cognitive function

improving memory,
behaviour,
concentration
and academic
achievement.



On the other hand **inactivity** negatively impacts

brain health and
executive control
including:
maintaining focus,
working memory,
multi-tasking.



Bridge School Walker Mobility

Hands Free Support Walkers at the Bridge School since 2006.



Bridge School Preschool



Researched based preschool language focused curriculum for ages 3-6 years. Walker mobility is imbedded in the curriculum.



Centers activity time

Preschool students are in support walkers 30-60 min daily to access..



Language/ Music Group



Outside Time



Camping



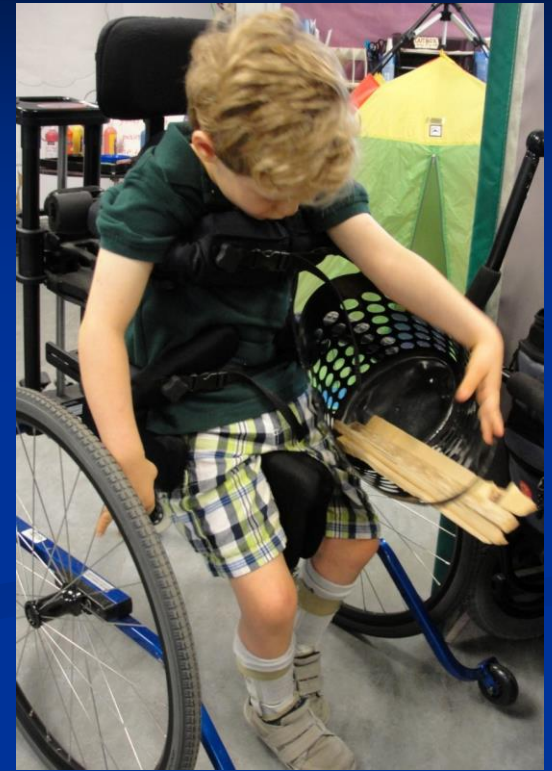
Dramatic Play



Dress up like a Princess



Pushing a tray of cookies



Carrying wood to the campground

Outdoor Time





Art



Feet painting using support walkers for indoor recess

Elementary Classroom



- A fully rounded curriculum that follows common core.
- Adapted for each student.
- Heavy emphasis on developing language skills.



Elementary students are in their walkers...

- 15 min daily for recess
- 30 minutes, 3x week, for sports, P.E., math/science group.



The playground was made accessible by grant funds

Recess Activities



**Soccer
Kickball**



Run, jump race



**Chalk toy mounted
to walker**

The Recess Race



Inclusion in Physical Education Class



Warm up exercises



Soccer with peers



Inclusive P.E.

IEP Mobility Goal to Access Recess

Mobility Baseline Student has no means for achieving independent activities with peers at recess.

Goal: By _____, during recess, when positioned in his/her own dynamic standing mobility device, student, when given a 12" ball placed 3 feet in front of him will take steps towards the ball and kick it to a peer for 2/3 trials as measured by his OT, PT or teacher.

Objective: By _____ Student, when positioned in a standing mobility device indoors on linoleum and given a 12" ball placed in front of his feet and with verbal and physical prompting, will kick the ball for 2/3 trials.

Objective: By _____ Student, when positioned in a standing mobility device indoors on linoleum and given a 12" ball placed 1 foot in front of him will walk to the ball and kick it for 2/3 trials.

Mobility Math and Science Group



Experimenting with pulleys and weight of objects



Predicting which object will roll the furthest

Mobility Math



Who is the tallest in the class?

Video Tape Students in Walker Activities to Share in Class





Field Trips: Fire Truck Exploration



Ice Skating



Observations of Students in their Support Walkers



Express Affection & Concern for Peers by Moving Closer to Touch and Hug.



A preschooler walked to her peer to comfort her when she started to cry, because music group was "All done."

Engage with People and Objects





An imaginative play moment: He interacts with his teacher, Initiates, verbalizes, gestures and self-directs.

Students Reach and Touch (often above shoulder height)



Attend and Focus with Movement



In his wheelchair he would get frustrated in circle time, kicking and banging his tray.



In his support walker, he would leave the circle to spin, jump and run, then return more focused to the group.



Sensory Motor Experiences & Mobility







Abba enjoys jumping in her KidWalk
Movement alerts the visual system



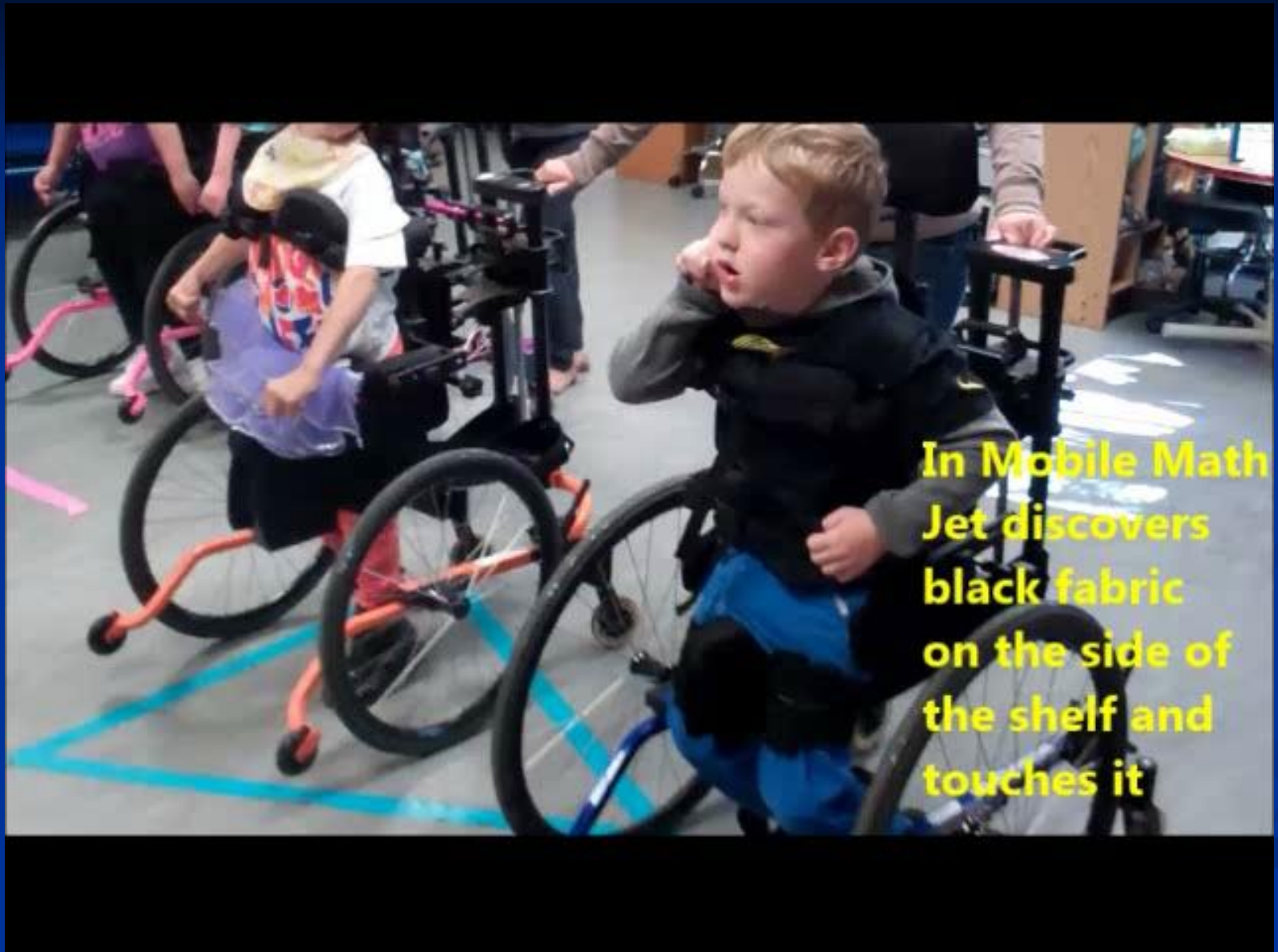
Showing excitement and visual attention
with movement during language group

Incidental Learning & Discovering How Things Work Demonstrate Curiosity





Bumping into the wall on his way to class he discovers a light switch.



Students Vocalize Frequently and Louder



“Physiological changes from an upright posture, such as changes in respiration, positioning of the diaphragm or length of vocal tract may facilitate ease of verbalization and articulation.” (Walle, 2016)

Abigail has decided
to surprise her
teacher for the
first time



Abigail decides to sneak up and surprise her teacher. She initiates, plans, anticipates, looks while reaching, touches, vocalizes, and uses a visual response to communicate.

Adam is playing a bear finding his teacher.
His teacher says "I'm just going to hide over here."
Oh man that bear is close!"



Adam sits quietly in his wheelchair, but vocalizes in his walker

Move and Orient to Sounds and Activities

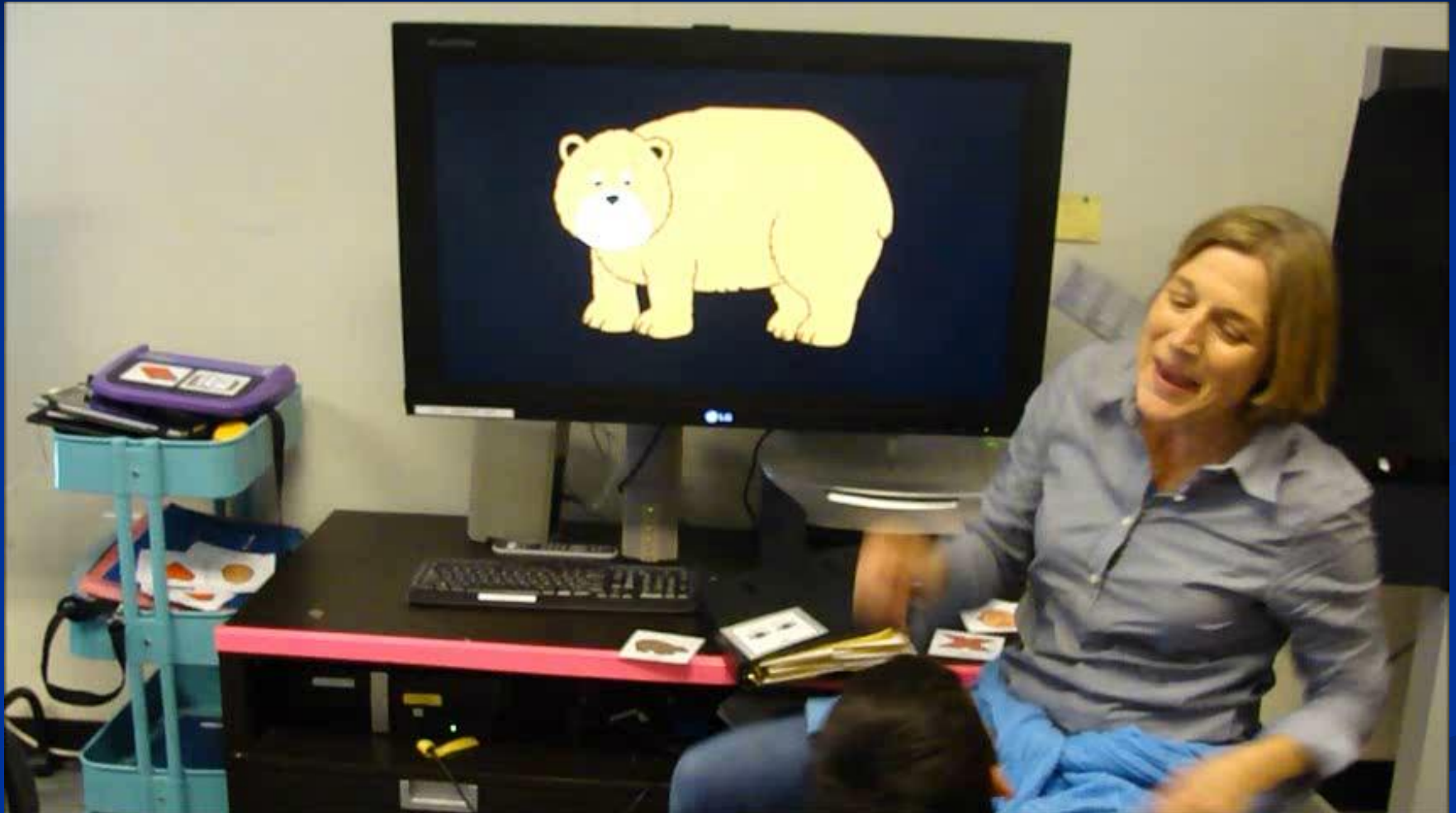


Niels is able to orient himself to sounds and activities



Students can move themselves to orient to activities and sounds.

Imitate Body Movements, Sign and Gesture



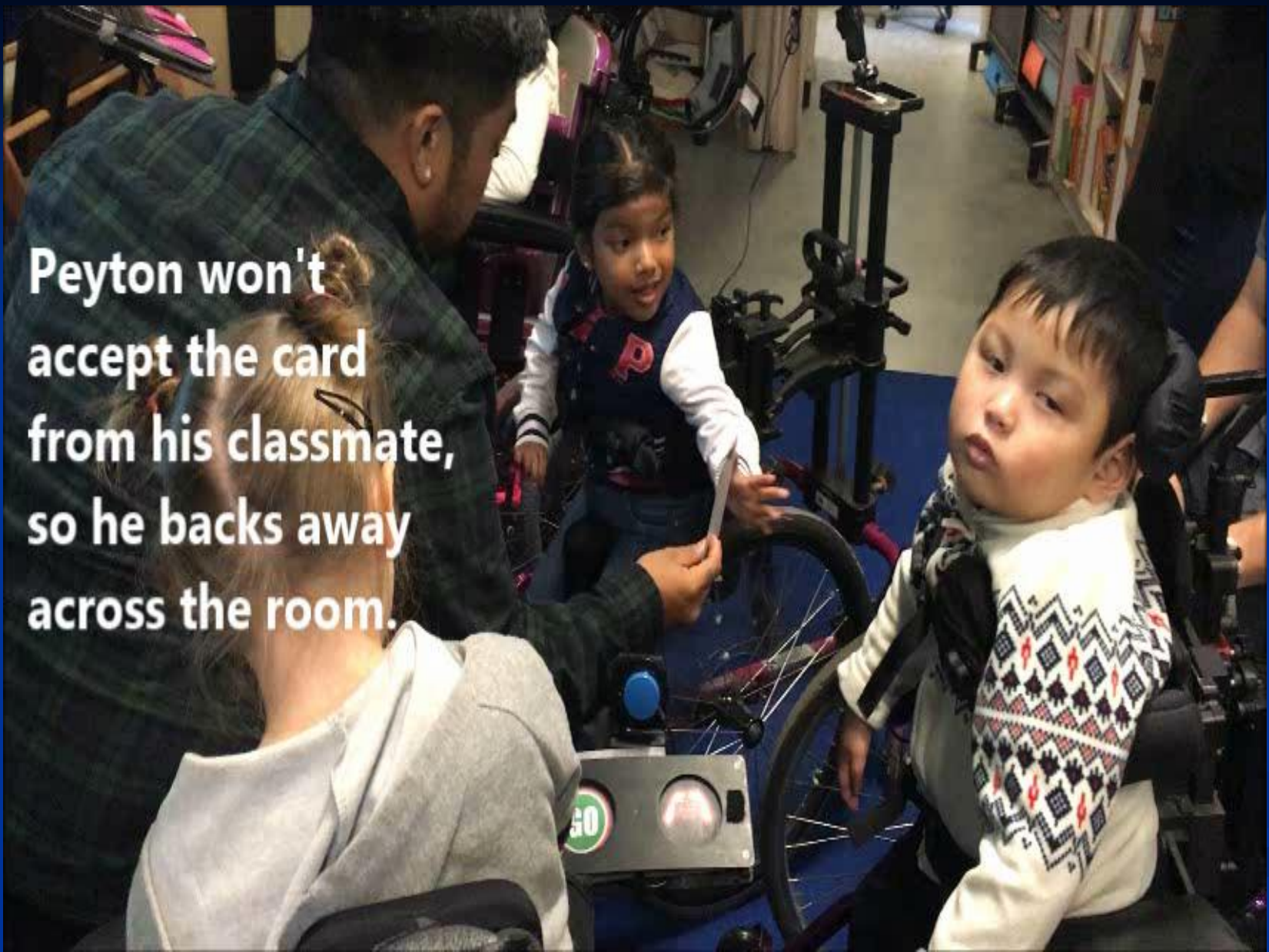
Mobility in Language Group



Imitation of body movements supports body awareness which contributes to spatial awareness.

Refuse & Reject by Moving Away from a Situation





**Peyton won't
accept the card
from his classmate,
so he backs away
across the room.**

Strategies for Encouraging Interaction in Walkers



Pop up firetruck



Velcro race car



Pop up bus

Hide & Seek with a peer



KidWalk

Carrying toys encourages interaction with peers.



Door handle adaptation so child can open the door



Participate in Authentic Recess Activities & P.E. Which Encourages Interactions with Peers



Arjun loves soccer and tries to get the attention of the players at recess

Adapted Sports

Gear tie wrapped around his hand helps him hold a bat.



Adapted Sports



An adapted baseball bat

The ball is on a tee stand and his arm is made into a bat by using a cut swim noodle and Velcro.



Peers Participate in Unique Events at Recess Project Walkway Fashion Show



Project Walkway

1. Curriculum: Develop vocabulary related to careers, clothing categories, shopping, buying, describing and choosing outfits & self care awareness.

2. Self – Determination: setting goals, making choices, making decisions, creating action plans, make connections with playground peers.

3. Communication: Using AAC systems including low tech and high tech to interact with peers, telling personal narratives through writing and posting on Instagram.

Choosing preferred outfits on an iPad





Classroom Preparation for Project Walkway

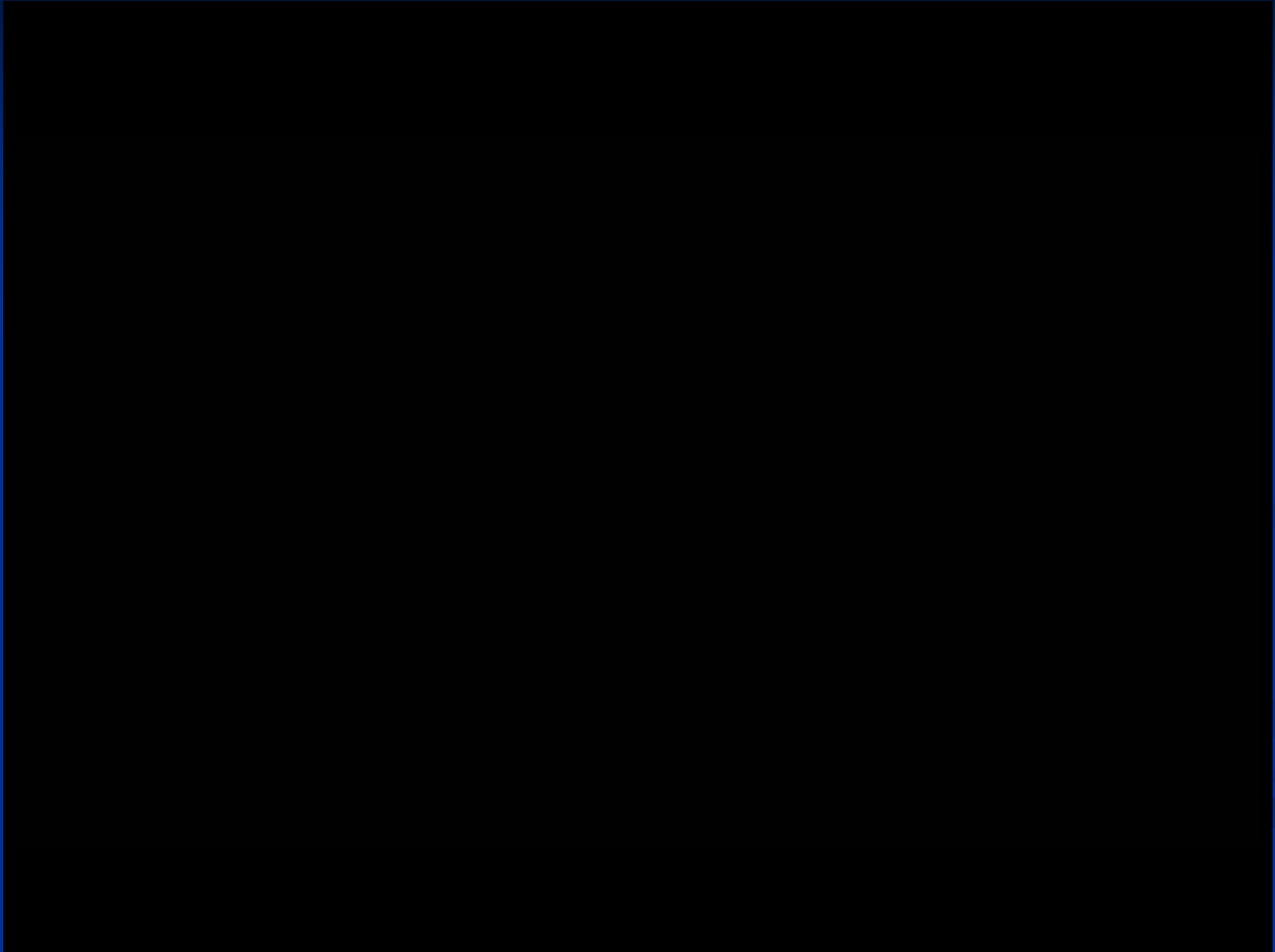


Deciding what to say on a Step-by-Step for recruiting a buddy at recess



"Hi, I'm Jackie. I'm doing a project and need some friends to help."

Project WalkWay Day







AT Devices & Adaptations for Use On Walkers

Sequential Message Device



Ablenet Step-by-Step

New: Mounting is stronger and the battery door has a toolless lock

RAM Mounts position and hold devices on walkers



RAM Mount for Step-by-Step

Blue switch mounted near elbow on RAM Mount, either behind the elbow, hand or near the head, to access recorded messages.



www.rammount.com

Announcer with 6 Levels

Sequencer communicator allows the user to first hear a series of words and then select one by simply activating a switch.



Enabling Devices

A 4 button display custom made with 4 switches is attached to her walker and is connected to a Super Talker.





Enabling Devices



Basic Talk 4



Talkables

Ablenet

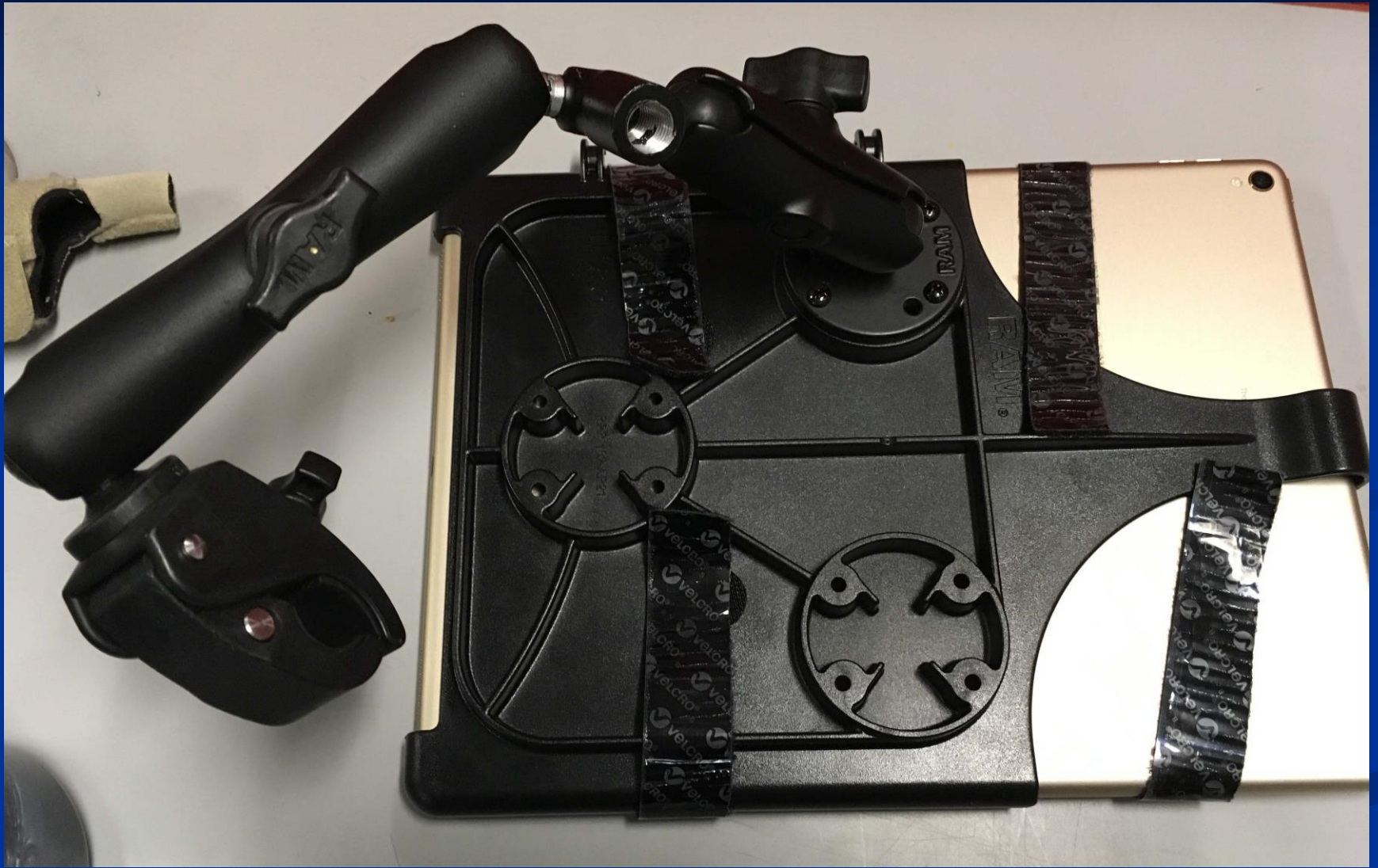


iTalk4 with levels

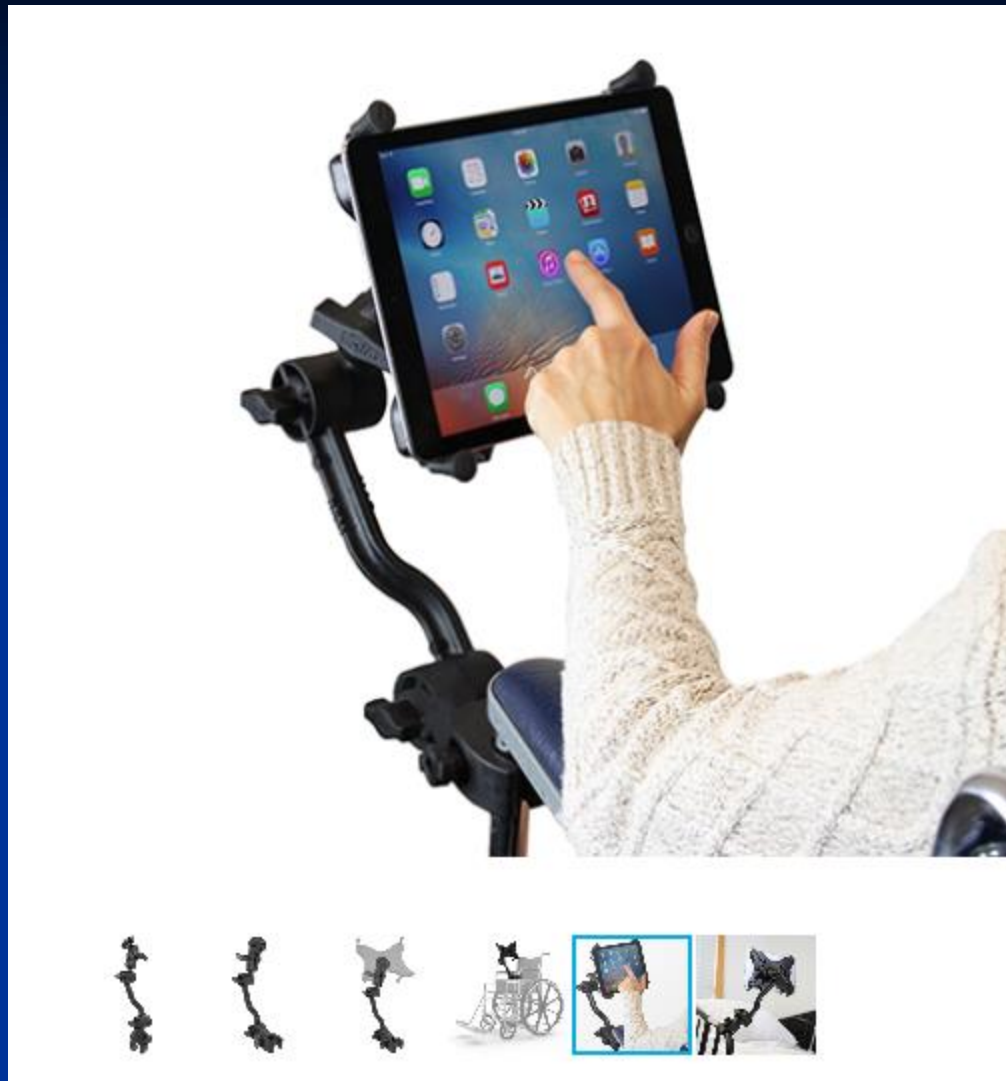


iPad mounted to her KidWalk for language group participation





RAM Mount for iPad on a walker



Rammount.com for tablet mount

Orby™ Switch

Button-style Adaptive Switch



Origin Instruments
Orin.com

“It takes a licking and keeps on clicking”

**Ultra Light 1 HD Switch
Enable Mart 22.50 each**







Sugru molded around end of wire to reduce fraying

STEP BY STEP

OOH BABY.

- CLEAN YOUR HANDS**
- CUT OPEN THE FOIL PACK**
- ROLL THE SUGRU IN YOUR HANDS**
- SQUIDGE IT ONTO SOMETHING**
Mould and shape it for up to half an hour 30m
- USE TOILET ROLL**
to clean your hands
- LEAVE IT FOR 24 HOURS**
AND IT'LL TURN INTO RUBBER 24hr

MORE TIPS AT SUGRU.COM/TIPS

Wow!

THIS IS GOING TO BE GREAT

GET GOING NOW WITH ONE OF THESE EASY FIXES

- PROTECT FURNITURE
- MAKE CABLES LAST LONGER
- STOP DOORS BANGING

CLASSIC RED

Sugru

SUNNY YELLOW

MOSSY GREEN

AWESOME ORANGE

PANTHER PINK

Sugru

8 SINGLE USE PACKS COLOURS:

TOTAL NET WEIGHT 40g (1.41oz) 8 x 5g (.17oz)

★★★★★ AMAZON 50 Best Inventions TIME MAGAZINE "Wonder Stuff" THE INDEPENDENT "21st Century Duct Tape" FORBES

Sugru MOULDABLE GLUE

FIX THAT THING LOOK INSIDE

6-IN-1

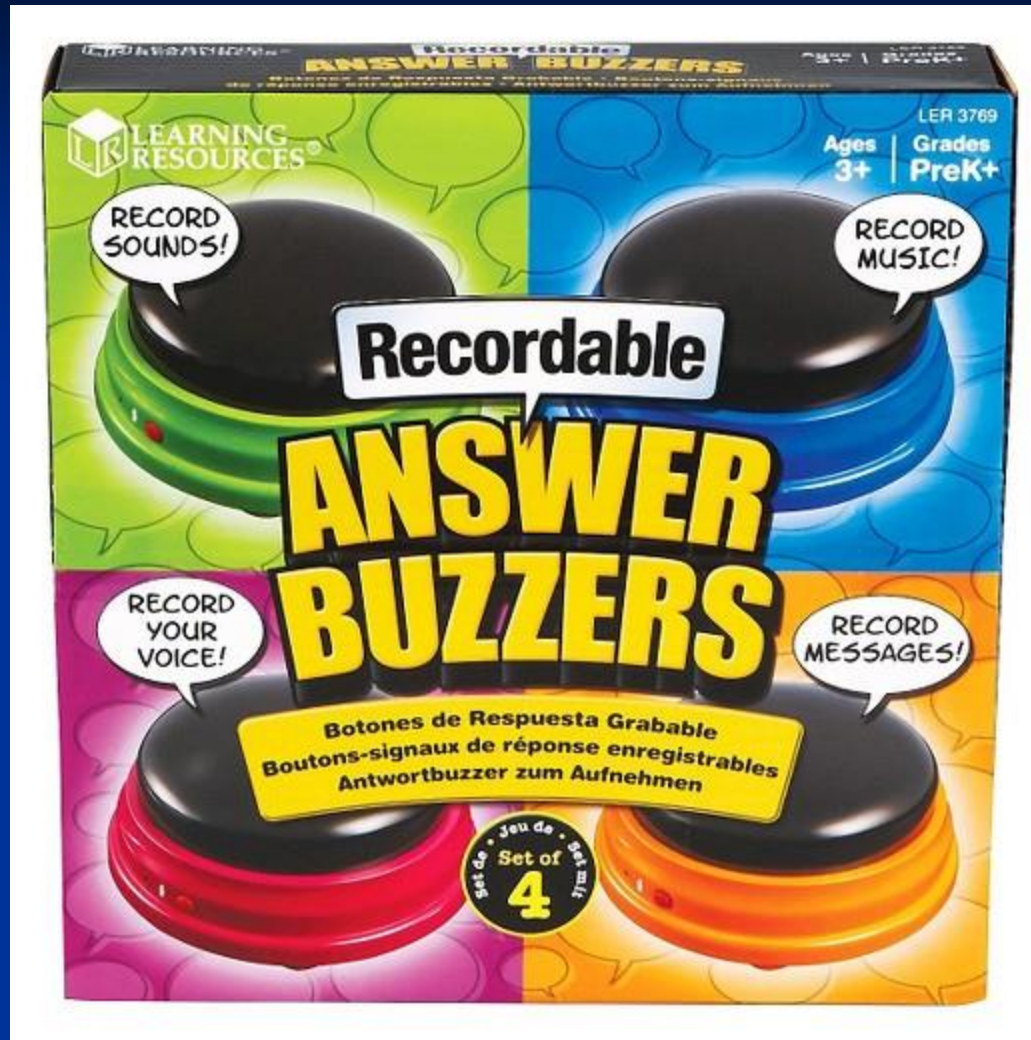
- ✓ FIX
- ✓ BOND
- ✓ CUSHION
- ✓ REPLACE
- ✓ CREATE
- ✓ SEAL

SNOW WHITE

Sugru

8 SINGLE USE PACKS COLOURS:

TOTAL NET WEIGHT 40g (1.41oz) 8 x 5g (.17oz)



Learning Resources 16.00 US for 4 recordable



Walker Features to Consider in the School Environment



Minimal hardware in front of child to access peers and activities.

Hands-free to access the environment, developmental activities and peers.



Hand held walkers limit access

Jack's hand held walker limited access to recess and communication



Jack learned to catch a ball after practicing in his walker at recess for 3 weeks.



Sensory Motor Experiences: Jump, Spin, Wiggle

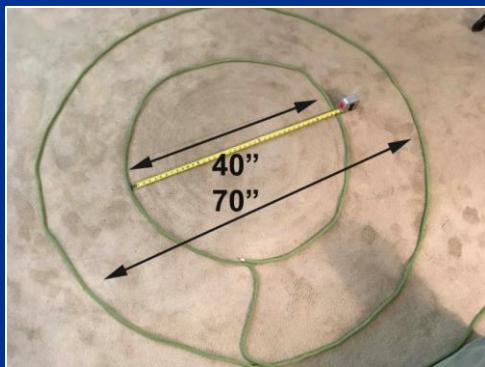
Try a walker that has vertical displacement, lateral shift.



KidWalk

Access areas with limited space (classroom) and recess.

- Hands Free.
- Small turning radius.
- Large mid-wheel helps to maneuver and turn on own axis.
- Or all 4 swivel casters
- Minimum 5-6" tires for outdoor use.



Pacer



ProneWalk



KidWalk



Mustang

40" turning radius for KidWalk.
70" for a fixed rear wheel walker
sized for child with 20" inseam.

Outdoor Mobility: Move over uneven surfaces: larger wheels (minimum 6" work best).



Kidwalk
Prime



ProneWalk
Prime



Mustang
Etac R82



Grillo
Mobility-USA



Pacer Rifton

Maneuverable over grass and fields for P.E.



KidWalk



ProneWalk

Explore & Expand the Mind

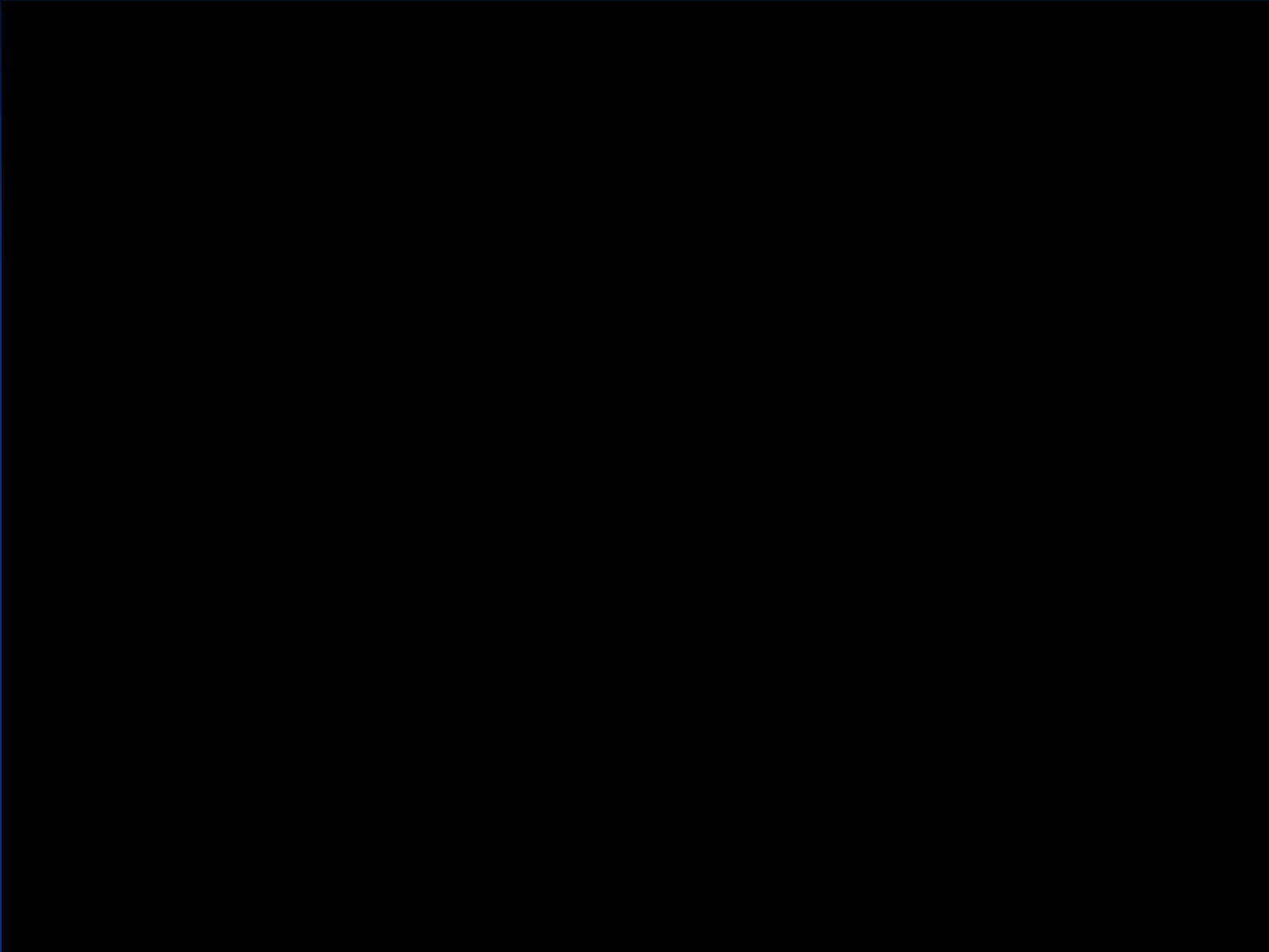
“In the final analysis it is not what you do for your children, but what you have taught them to do for themselves that will make them successful”.

A Landers



Thank You....





Thank you

ASHA CEUs

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- Please fill out our short survey

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- Video & slides for all webinars
- Available in a few days

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International Society for
Augmentative and Alternative Communication



ISAAC is pleased to announce that **ISAAC 2020**, the 19th Biennial Conference of the International Society for Augmentative and Alternative Communication, has been rescheduled for 2021. As originally planned, the Conference will be held at the Cancún International Convention Centre (ICC) in beautiful **CANCÚN**, adjoining the Riviera Maya on México's Caribbean coast.

JULY 31 – AUGUST 1, 2021

AAC Camp, Pre-Conference Workshops, Executive and Council Meetings

AUGUST 2 - 5, 2021

Main Conference at the Cancún ICC, México

Surrounded by Mayan culture and with easy access to beautiful beaches, tours, shops and restaurants of both Cancún and the Riviera Maya, the ISAAC conference will feature AAC events and perspectives; cutting edge research and clinical innovations; workshops, seminars, exhibits, social events, and entertainment, all in a unique cultural setting.

**Mark your calendar today, and save
the date for ISAAC 2020 (now 2021) in Mexico!**

**For more information, visit us at www.isaac-online.org
and follow #ISAAC2020 on Twitter.**

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ISAAC se complace en anunciar que el próximo XIX congreso de la Sociedad Internacional de Comunicación Aumentativa y Alternativa se ha sido reprogramado para 2021. Según lo planeado originalmente, la Conferencia se llevará a cabo en el Centro Internacional de Convenciones (ICC) de la bella ciudad de **CANCÚN**, contigua a la Riviera Maya de la costa del caribe mexicano.

31 DE JULIO - 1 DE AGOSTO, 2021

Campamento de CAA, Talleres Preconferencia, Juntas Ejecutivas y del Consejo

2 - 5 DE AGOSTO, 2021

Congreso principal en el ICC de Cancún, México

Rodeado por la cultura maya y con fácil acceso a playas hermosas, tiendas, restaurants y tours tanto de Cancún como de la Riviera Maya, el congreso de ISAAC contará con eventos de CAA, perspectivas, lo último en investigaciones e innovaciones clínicas, talleres, seminarios, exposiciones de las compañías más importantes, eventos sociales y entretenimiento. Todo en un sitio culturalmente único.

**¡Anótalo en tu calendario y aparta
la fecha para ISAAC 2020 (ahora 2021) en México!**

**Para mayor información, consulta nuestro sitio web www.isaac-online.org
y síguenos en Twitter #ISAAC2020**

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