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Proudly present

Bridging Research to Practice with Visual Scene Displays


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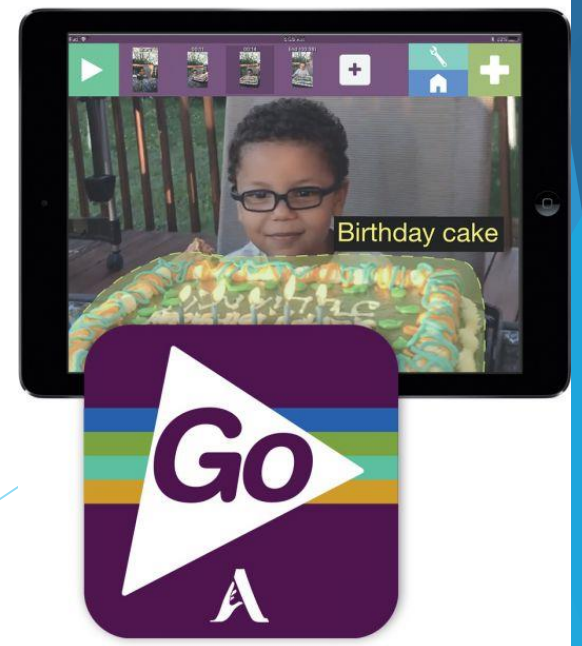

PRESENTERS

Salena Babb, Ph.D., M.Ed.
Adjunct Professor at Messiah University

Jessica Caron, Ph.D. CCC-SLP
Assistant Professor at Penn State University

Nimisha Muttiah, Ph.D. CCC-SLP
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Christine Holyfield, Ph.D., CCC-SLP
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Emily Laubscher, M.S. CCC-SLP
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Michelle Therrien, Ph.D. CCC-SLP
Assistant Professor at Florida State University

MODERATOR Jessica Gosnell Caron, Ph.D. CCC-SLP

Format

- Each panelist will present for approximately 8 minutes
- Q & A at the end
  - Type questions in the chat feature
    - Moderator (Jessica Caron) will compile and run the Q & A at the end of the session

Agenda
(Order & Topics of Panelists)

- 1. Overview of terminology used across studies/presentations (Christine Holyfield - University of Arkansas)
- 2. Using VSDs to support peer interaction during book reading (Michelle Therrien - Florida State University)
- 3. Using Video VSDs to support communication during play (Emily Laubscher - Penn State University)
- 4. Training paraprofessionals to use low-tech VSDs (Nimisha Muttiah - University of Kelaniya)
- 5. Using the Transition to Literacy feature in VSDs to support single word reading (Jessica Caron – Penn State University)
- 6. Using Video VSDs to support work skills (Salena Babb - Messiah University)

Objectives:

- 1) Participants will be able to discuss 3 research studies to support use of visual scenes in AAC
- 2) Participants will be able to identify a minimum of 2 research - based design features that have applications to clinical practice
- 3) Participants will identify 3 ways visual scene displays can be used to support individuals who use AAC

Visual Scene Displays: Background Information

UNIVERSITY OF ARKANSAS

College of Education & Health Professions

Rehabilitation, Human Resources & Communication Disorders

Christine Holyfield, Ph.D., CCC-SLP

University of Arkansas

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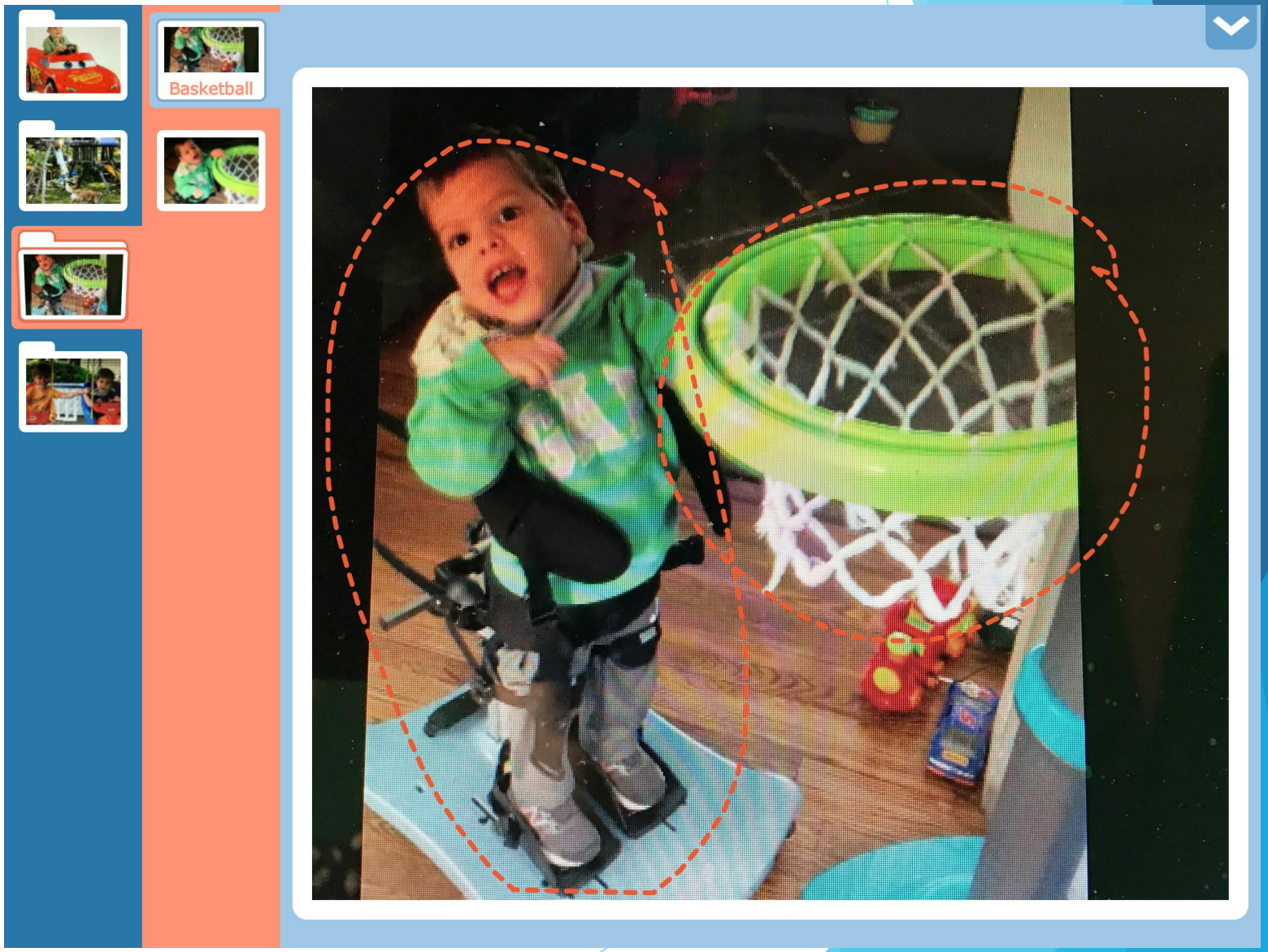
: @Holyfield_AAC

Visual Scene Displays (VSDs)

- "Graphic metaphor" (Shane, 1998)
- Vocabulary embedded under a "hot spot" in visual scenes
- Vocabulary presented in a meaningful context



Advantages to VSDs

- Its challenging to integrate AAC systems with other things

- Coordinate attention to:
  - Themselves
  - Partners
  - Activity (e.g., book , video, toys, work task)
  - AAC system

- VSDs help to support infusion of the activity --- therefore reducing cognitive and linguistic demands (Light & McNaughton, 2012)

Video VSDs (VVSDs)

- Video Prompting:
  - Form of video modeling in which chained task is broken down into individual steps
- VVSD
  - Video + Communication
  - Video plays, then pauses & a still image appears (a VSDs with hotspots)

Light, McNaughton, & Jakobs (2014)

Visual Scene Displays (VSDs) with Dynamic Text

- Photos and videos are meaningful and motivating
  - This supports language and communication
- When dynamic text is added, single word reading skills can be supported simultaneously (refer to J. Caron talk)
- The Transition to Literacy (T2L) feature (Light, McNaughton, Jakobs, & Hershberger, 2014) pairs dynamic text with voice output hotspots

Visual Scene Displays (VSDs) – Clinical Applications of Research

- Can be used to support a number of areas:
  - Communication
  - Play
  - Literacy
  - Work
  - Training/Communication Partners
- Can be low-tech, high-tech, and include video or not
- Can help integrate task, communication, and activity

VSD Supports Available (some examples of what you will see)

- Can be low-tech (refer to N. Muttiah talk)
- Can be high-tech, with or without video

Invotek, EasyVSD

Attainment, GoVisual

TobiiDynavox, SnapScene

Supporting peer interaction for children with complex communication needs

Michelle Therrien, Ph.D.
Florida State University
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AAC CONNECT LAB

Disclosures

- The research included in this presentation was supported in part by:
  - The Hintz Family Foundation (Pennsylvania State University)
  - ASH Foundation's Student Research Grant in Early Childhood Language Development (2015-2016)
  - ASH Foundation's New Investigator's Research Grant (2019-2020)

Social Relationships

- Improve physical & mental health
- Benefit cognitive & language development
- Reduce risks for social isolation, depression, and poor school performance

Bukowski, Motzoi, & Meyer, 2009

Cohen, 2004

Hartup, 1989

Children with CCN

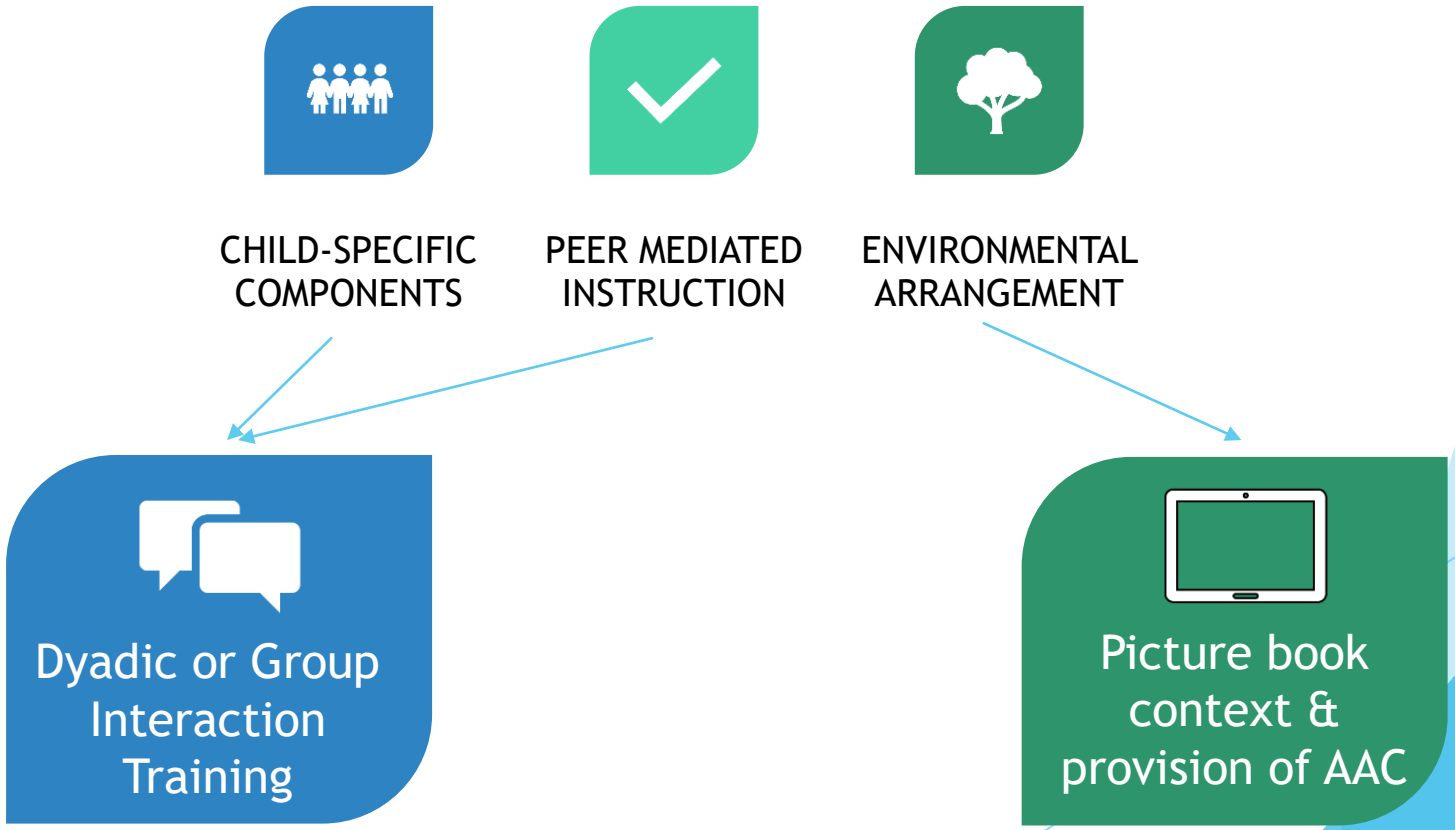
- Rarely communicate with their peers even when included in general education classrooms
- Have trouble using language to establish and maintain friendships in early childhood
- Are at risk for social isolation without intervention

Chung, Carter, & Sisco, 2012

Gertner, 1994

Therrien, Light, & Pope, 2016

I'M A PAL Social Interaction Intervention Components



Therrien & Light, 2016; 2018; Therrien, in press

Picture book context

- Structure
- Something fun & motivating to talk about
- Common vocabulary

Provision of AAC

- AAC with voice output as environmental support
- VSDs provide conceptual support for vocabulary learning
- Communication is embedded in the shared activity
- iPad makes it fun and motivating for peers to model

FUNctional hotspots

Hot spots should be FUN!

- sound effects
- character voices
- exaggerated emotion
- silly words – "uh oh!" "hooray!"

Hot spots should be functional

- ask & answer questions
- call attention to a part of the picture
- relate the picture to the child's experience

Group Interaction Training – Child skills

- When we read on the iPad we **SHARE** with a friend
- You **show** your friend something in the book and **tell** them about it!
- Then you **wait** for your friend to take a turn!

Dyadic Interaction Training – I'M A PAL

- I - introduce with enthusiasm
- M - model the skill
- A - assisted practice
- P - provide feedback
- A - accessible AAC
- L - let children know the rules

Results

NATIONAL INSTITUTE ON DISABILITY, INDEPENDENT LIVING, AND REHABILITATION RESEARCH

NIDILRR

RERC on AAC

Using Video VSDs to Support Interactive Play Between Children with ASD and Peers

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Funding

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a) the Penn State AAC Leadership Project, a doctoral training grant funded by the U.S. Department of Education, grant #H325D170024;

b) b) a graduate student research grant from the Organization for Autism Research (OAR); and

c) c) a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR grant number #90RE5017) to the Rehabilitation Engineering Research Center on Augmentative and Alternative Communication (RERC on AAC); NIDILRR is a Center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). The contents of this article do not necessarily represent the policy of NIDILRR, ACL, HHS, and you should not assume endorsement by the Federal Government.

Background

Play with peers is an important context for language learning and social development in childhood (Schuler & Wolfberg, 2000; Charlop, Lang, & Rispoli, 2018; Freeman, Gulsrud & Kasari, 2015)

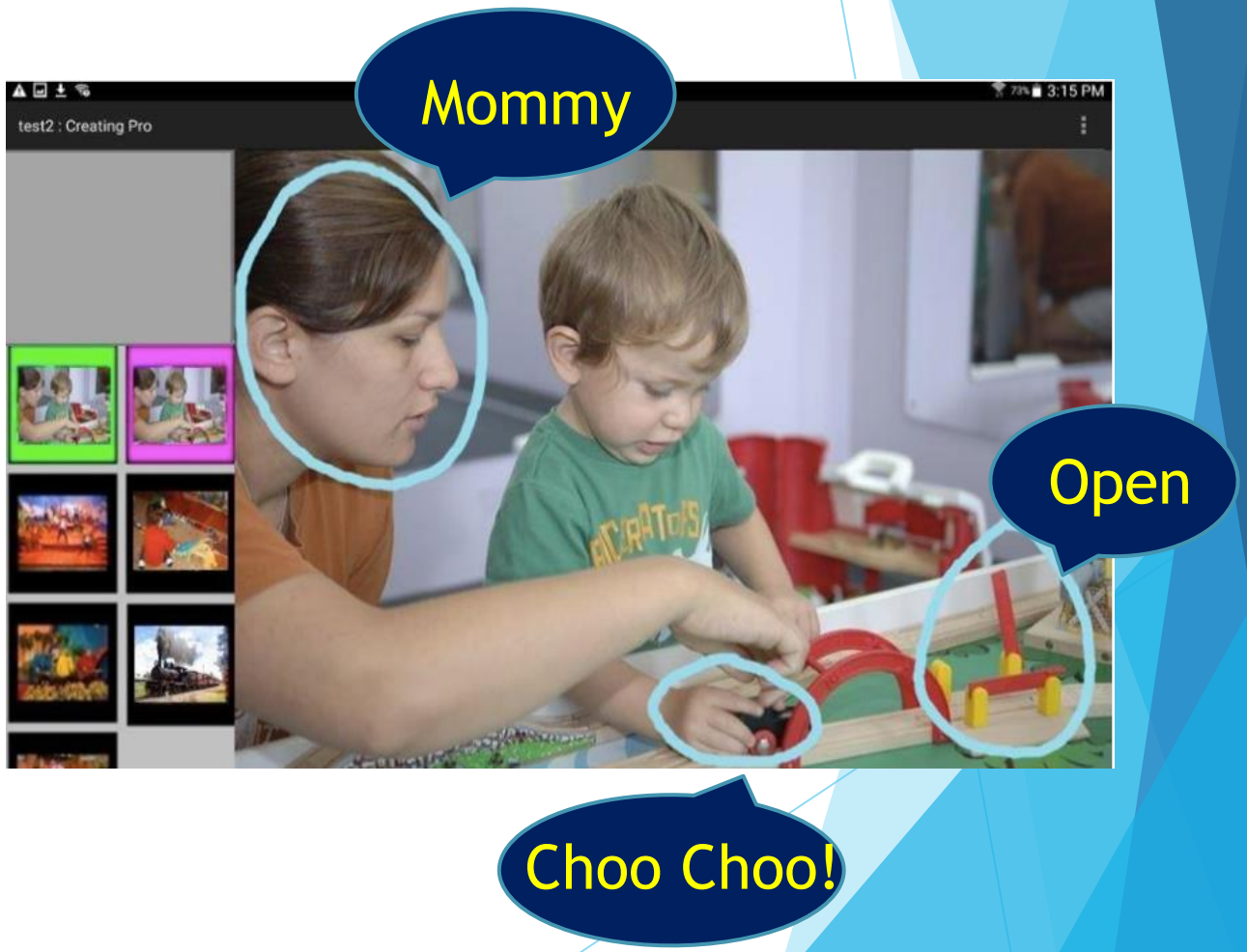
- Vocabulary, complex language structures, and rules of conversation
- Sharing, turn-taking, social problem-solving
- Friendship formation

Background

- To benefit from learning opportunities afforded by play, children must be able to participate (Wilcox & Woods, 2011)
- This requires competence in both play and communication skills (Boudreau & Harvey, 2013)
- Children with ASD often have difficulties in both of these areas (e.g., Wilson et al., 2017; Charlop et al., 2018)
- Those with limited speech are especially at risk for exclusion

Video VSDs

- Video VSDs offer an approach that may support both play and communication simultaneously
  - Video provides a model for play actions or sequences (Fragale, 2014)
  - Embedded VSD supports communication



Research Question

What is the effect of a video VSD intervention on communication and play for children with ASD during play interactions with peers?

Laubscher, Barwise, & Light (2019)

Participants and Setting

6 child dyads

- 6 children with ASD (4 severe; 2 mild-mod.); all had limited speech
- 6 peers with typical development
- Mean age: 6;6 (range: 5;5 – 9;2)

2 elementary schools (quiet areas separate from class)

Materials

Toys with related video VSDs, created using GoVisual™

- Videos modeled play actions with an important role for both children
  - Functional play
  - Symbolic play
- Hotspots provided language concepts that were relevant to the toys and appropriate for beginning communicators

Car Garage

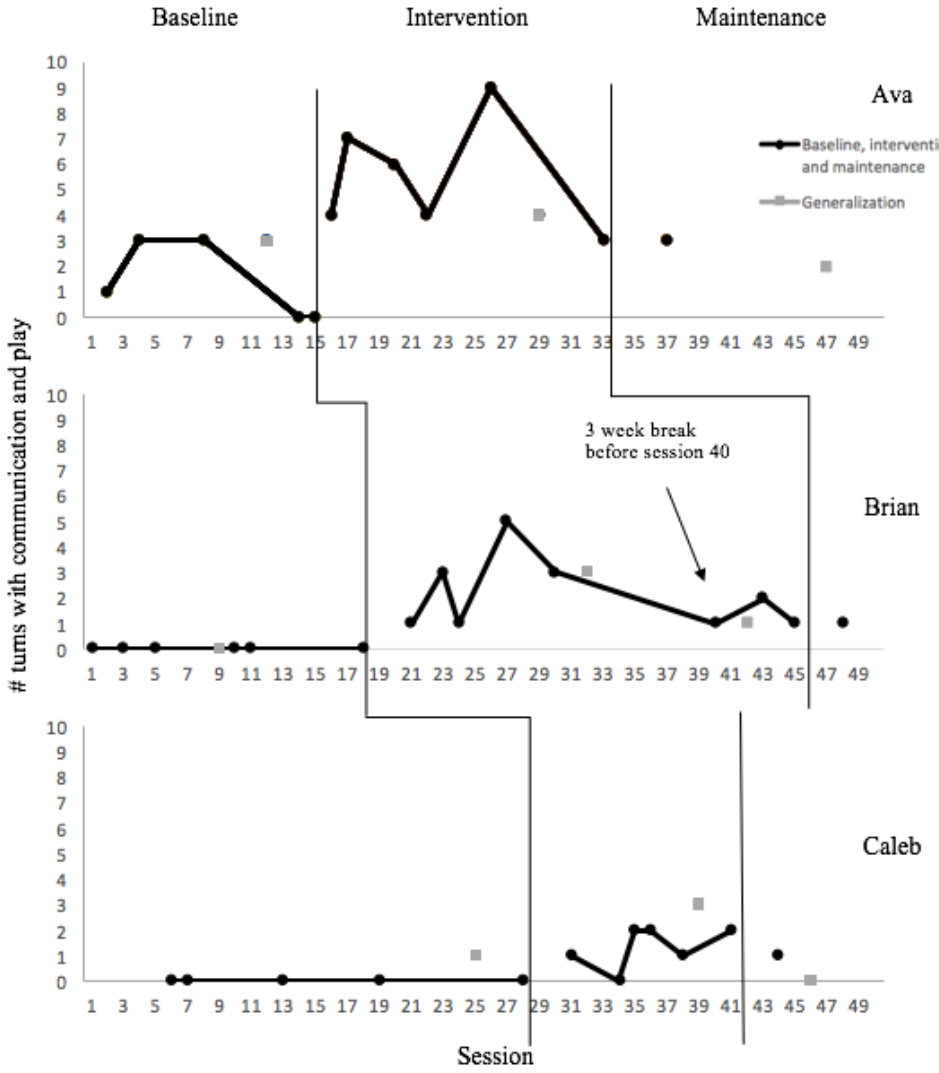
Pets

Food

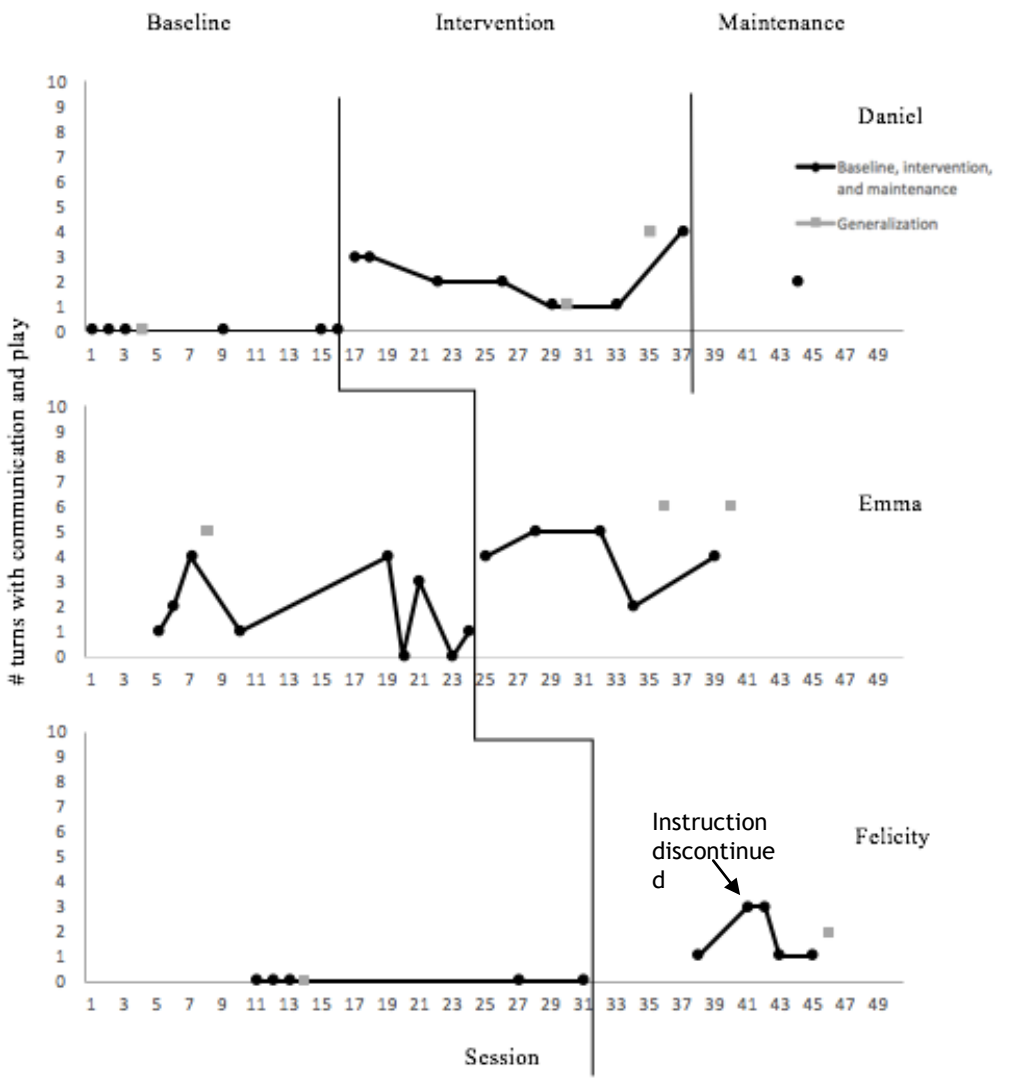
Procedures

- Baseline:
  - Children took turns choosing a set of props to play with; no video VSDs available
- Intervention:
  - Children took turns choosing a set of props to play with; a related video VSD was available to support them during play
- Instruction
  - During each turn, children were provided least-to-most prompting to
    - a) complete a play action following the video model and
    - b) use a hotspot to communicate

Cohort 1



Cohort 2



- **5 out of 6 participants experienced an increase in the number of turns in which they both communicated with their peer and engaged in functional/symbolic play**

Results: Play and Communication Skills

Participant	Tau-U	Gain Score
Ava	.9 (very large effect size)	+4.1 turns
Brian	1.0 (very large effect size)	+2.1 turns
Caleb	.8 (large effect size)	+1.3 turns
Daniel	1.0 (very large effect size)	+ 2.3 turns
Emma	.8 (large effect size)	+2.2 turns
Felicity	1.0 (very large effect size)	+1.8 turns

All 5 participants who made gains demonstrated large or very large effect sizes

Conclusion and Clinical Tips

- The Video VSDs intervention may help to increase the number of turns in which children with ASD demonstrate both functional/symbolic play and peer-directed communication

- Clinical tips:
  - Choose play actions/sequences that include an important role for both children
  - Choose language concepts that are appropriate for the learners' age and stage of language development; don't forget fun concepts like sound effects!

References

Effects of Training Paraprofessionals using Low-Tech Visual Scene Displays (VSDs) with individuals who have Complex Communication Needs (CCN)

Nimisha Muttiah, Ph.D., CCC-SLP
Senior Lecturer
University of Kelaniya, Sri Lanka

Disclosures

- I have no relevant financial or non-financial relationships to disclose.

Low-Tech VSDs

- Low-tech VSDs have been successfully implemented with adults with acquired conditions (Hux, Buechter, Wallace, & Weissling, 2010).

- There is an emerging body of research that discusses the benefits of using high-tech (Ganz, Hong, Gilliland, Morin, & Svenkerud, 2015) and low-tech (Muttiah et al., 2019) VSDs with children who have CCN.

Paraprofessionals

- Paraprofessionals provide educational supports to individuals with CCN
- However, many paras do not receive any specific training on communication strategies that would facilitate communication for children with CCN.

Current Study

- The current study implemented a training for a group of paraprofessionals working with individuals with CCN in a school setting.
- The paras were trained to use low-tech VSDs and to provide evocative communication opportunities to children with CCN.

Evocative Communication Opportunities

- Evocative communication opportunities place the child in a more active role (Whitehurst et al., 1988).
- Definition of an evocative communication opportunity,
  - an open-ended question (which excluded yes or no questions), comment, or choice;
  - provision of a means for the student to respond
  - wait time of 5 sec or more

  Adapted from Light et al. (1985), Douglas et al. (2014), and Whitehurst et al. (1988).

Participants

- Paraprofessional participants,
  - Wide range of experiences working as paraprofessionals (between 8 months - 20 years).
  - Special education qualification - no training to limited training.

- Student participants,
  - Age range from 6 years – 21 years.
  - Variety of diagnoses.
  - A majority of the children were at a pre-symbolic level, two of the children used a few words and signs.

Method

- An interrupted time-series quasi-experimental design (Shadish, Cook, & Campbell, 2002)
- The independent variable:
  - provision of AAC training + Low-tech VSDs to paraprofessionals.
- The primary dependent variable:
  - number of evocative communication opportunities provided by paras.
- The secondary dependent variable:
  - number of communication turns taken by students with CCN.

Training Phase

- The duration of the group training was between 2.5-3 hours.
- The training content was determined based on a number of factors, a primary factor being the needs of the learners.
- The training was conducted following the principles of adult learning:
  - Adults learn through hands on activities
  - The content provided needs to be relevant to their situation
- The individual follow-ups were done with each para-student dyad in their classrooms.

Post-training videos

Clinical Implications

- This short-term training resulted in positive outcomes,
  - increased evocative communication opportunities provided by paras
  - increased number of communication turns taken by the children
- The current study supports implementation of low-tech VSDs with beginning communicators who ranged in age, skill level, and interests.
- This study provides a model for an efficient but effective communication partner training
- It also provides evidence for the use of low-tech VSDs that can be easily developed and implemented.

Using VSDs with the Transition to Literacy(T2L) Feature

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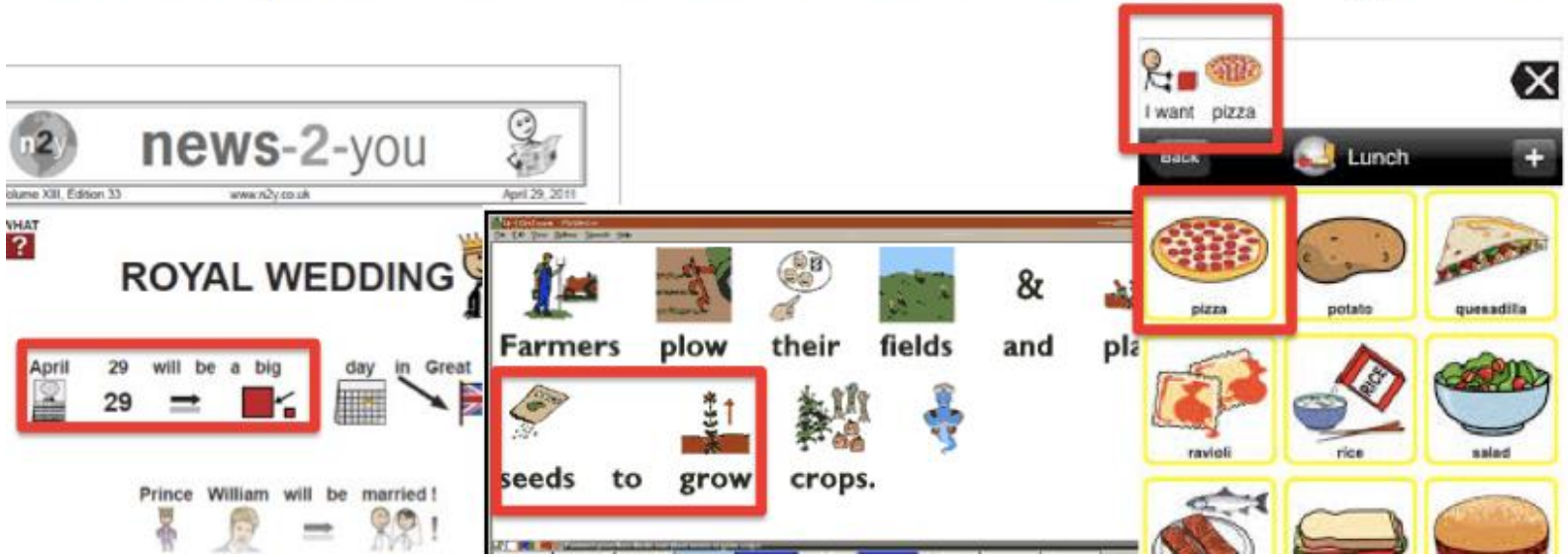
Disclosures

- The T2L feature was developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation research (NIDILRR grant number #90RE5017) to the Rehabilitation Engineering Research Center on Augmentative and Alternative Communication (RERC on AAC). http://rerc-aac.org
- NIDILRR is a Center within the Administration for Community Living (ACL), Department of Health and Human Services (HHS). The contents of this presentation do not necessarily represent the policy of NIDILRR, ACL, HHS, and you should not assume endorsement by the Federal Government
- Disclosure: The author has no relevant financial relationships or relevant non-financial relationships to disclose

RERC on AAC

AAC systems commonly use paired text and pictures (i.e., photographs or icons) to represent concepts that individuals with CCN can communicate with.

Examples of Current AAC technologies:



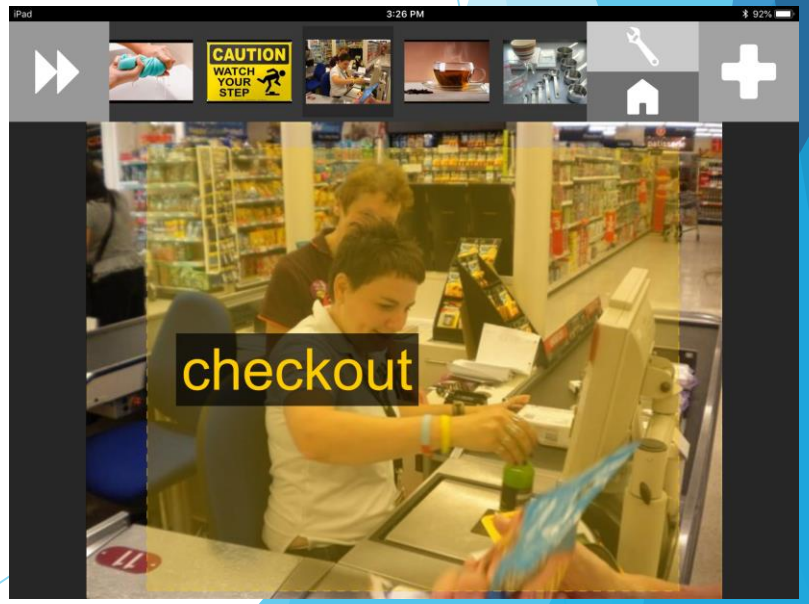
Pictures, when paired with print in a static manner, can interfere with word learning (Saunders & Solman, 1984; Singh & Solman, 1990; Solman & Singh, 1992).

Transition to Literacy (T2L) Software Feature (Light et al., 2014)

- Individual selects a picture symbol from AAC display
- Written word appears **dynamically** on the screen
- Written word is spoken by app (text is paired with symbol & speech output)
- Written word shrinks and original screen appears

T2L Feature Available: https://rerc-aac.psu.edu/

- 2 apps
  - Grid-based T2L app developed by Saltillo (Hershberger)
    - Incorporated into NovaChat devices
  - VSD T2L app developed by InvoTek (Jakobs) – Easy VSD
    - Incorporated into
      - SnapScene by TobiiDynavox
      - GoVisual by Attainment



Challenge:

- Caron and colleagues (2018):
  - Time for literacy instruction is limited
    - Balance between teaching AAC system & direct instruction in literacy
    - Struggle for teachers – lots of students, lots of different needs to focus on
      - Limited time in instruction & limited time for practice

"It is virtually impossible to become proficient at a mental task without extended practice." Willingham, 2009

Possible Option for T2L use:

- Initial Teaching + Practice (teacher-directed & feedback from instructor)
- Distributed Practice (short sessions over time - use of T2L small sessions through the day/week)
- Cumulative Review (review of skills & knowledge check-in from teacher)

- Adapted from Anita Archer – Explicit Instruction Text

VSDs to support single word reading

- First have to find out if T2L can support word learning!
- **Effects of the T2L Feature in VSDs on single word reading for individuals in high school with CCN?**

Method

Design

- Single Subject
  - Multiple probe across participants

Participants

- N = 6
  - 2 individuals with ASD (CARS-2 ratings of moderate to severe); 2 w/ DS; 1 with CP; 1 w/ genetic dis.
  - CCN; 4 individuals used high-tech AAC systems
  - Participating in Edmark reading program –"Functional word series"
  - Knowledge of some LSC
  - Not decoding

Assessment of Single Word Knowledge/Acquisition:

I	**like**	**see**	Oscar	water
pasta	soda	beans	tuna	trash
box	pizza	cash	corn	bread
chips	taco	shelf	peas	soup

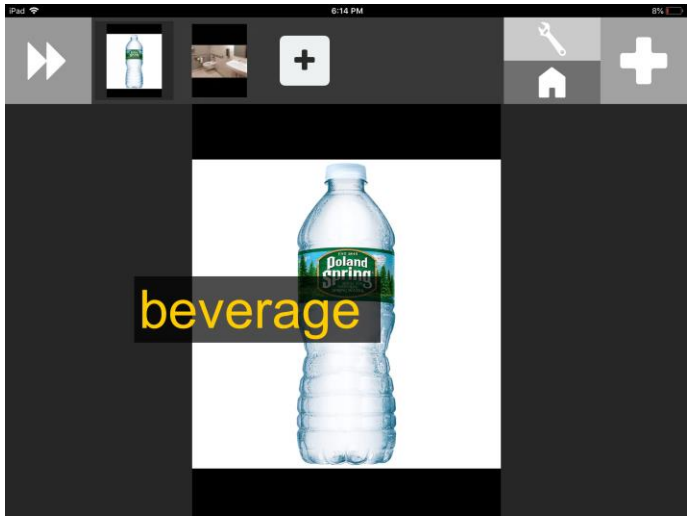
Word Examples:

Cosmetics
Cashier
Measure
Recycle
Manager
Restroom
Medium
Restaurant
Beverage
Broken
Rinse
Caution
Checkout
Microwave
Barcode

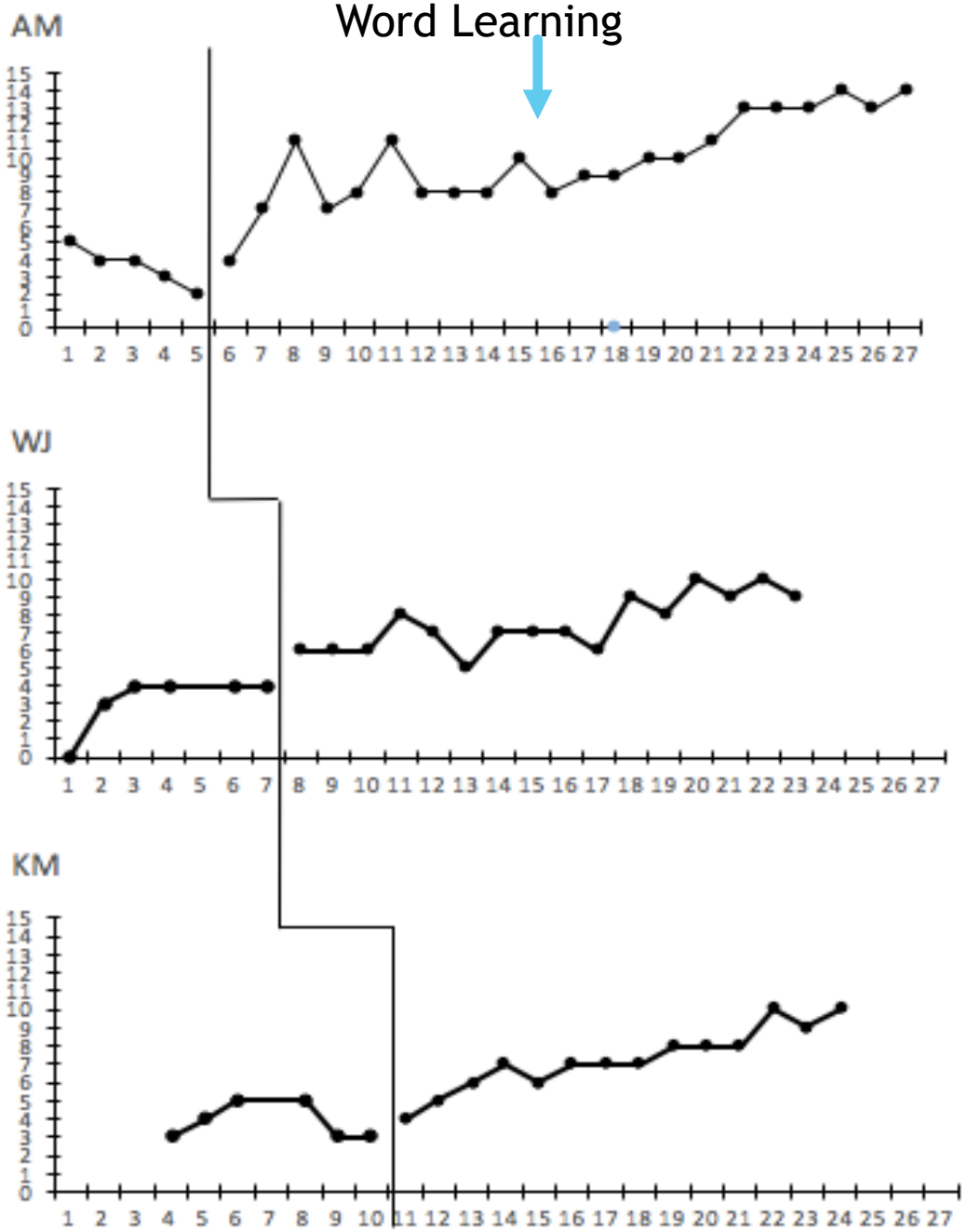
Intervention:

- Practice when they can
- Needs to happen daily
- No feedback from teachers – occurring independently
- VSDs link – individual should go through a set of words

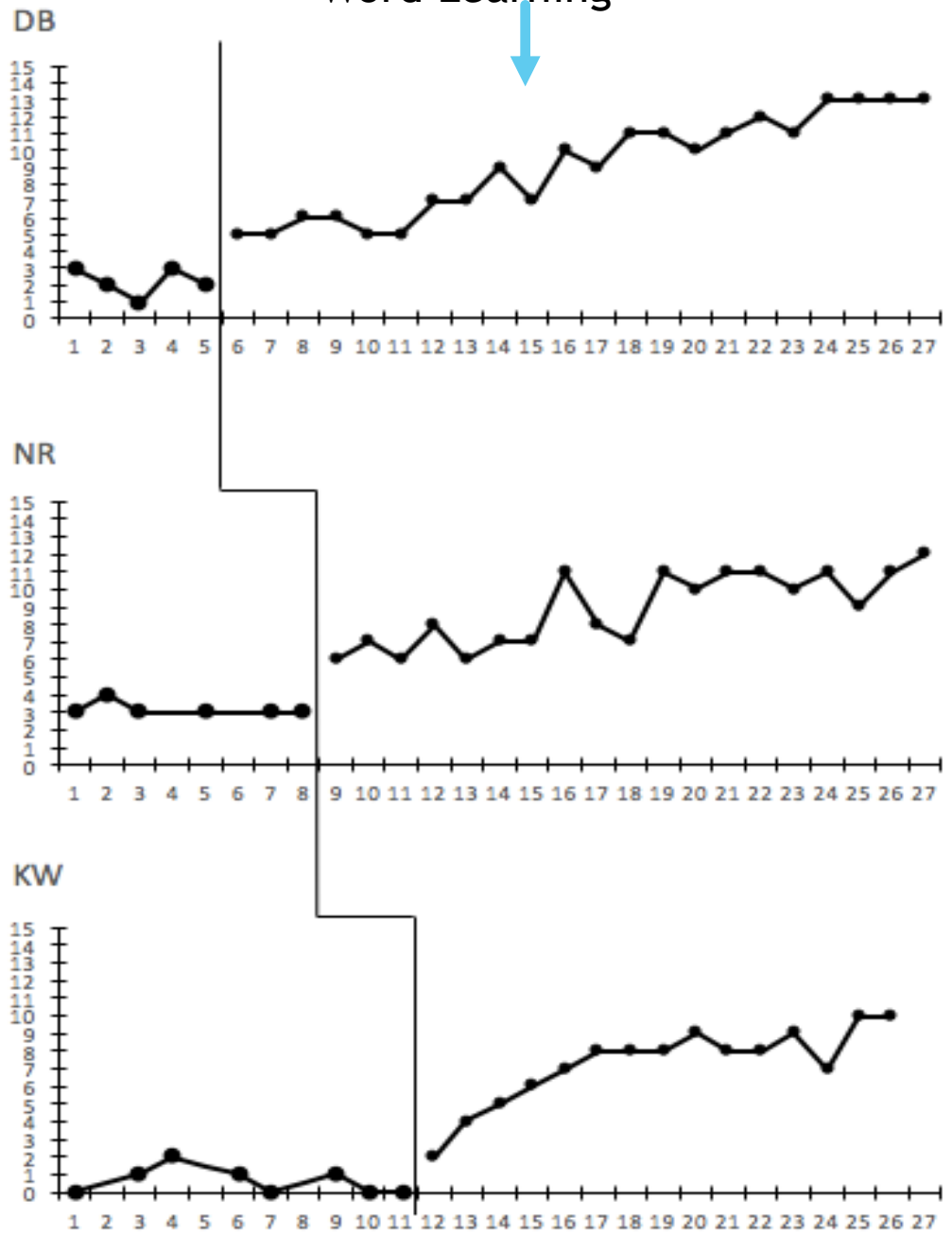
Video example of T2L software features in a AAC Visual Scene Display



Intervention effect on Single Word Learning



Intervention effect on Single Word Learning



Exposure Data: Activations Per Word

DB	AM	KW	NR	KM	WJ
260-267	222-248	91-98	85-95	81-83	67-74

*low exposure #s for 2 individuals with ASD

Clinical Implications

- Teachers found it very easy to implement
- Option in addition to direct literacy instruction – practice, practice, practice!
- Could be a great option for “free time,” “independent reading time”
  - Add images of high interest
  - Add books that are read per page and a key word they are learning would be the T2L feature

Work Skills and Video VSDs

Salena Babb

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Disclosures

- The EasyVSD app was developed under a grant from the National Institute on Disability, Independent Living, and Rehabilitation research (NIDILRR grant number #90RE5017) to the Rehabilitation Engineering Research Center on Augmentative and Alternative Communication (RERC on AAC). http://rerc-aac.org
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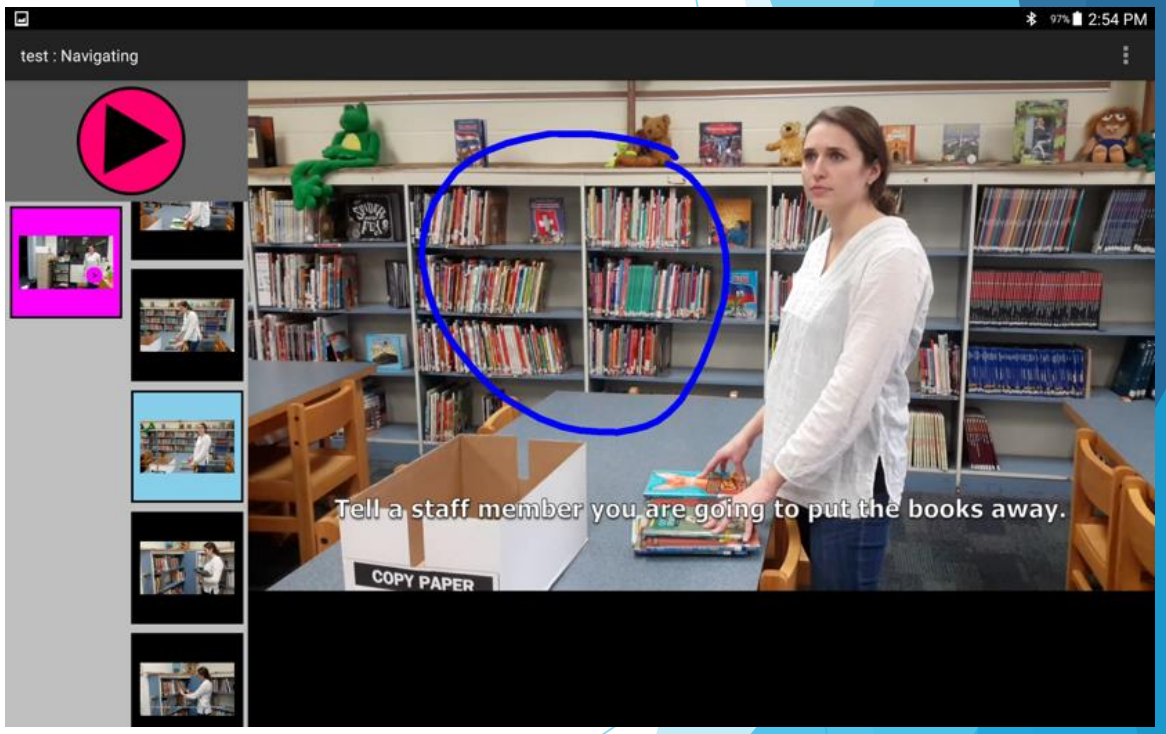
Purpose/Research Question

- Employment and Independence
- Support for both participation and communication
- Question: **What is the effect of a Video Visual Scene Display app on the participation and communication for an individual with ASD during a vocational activity?**

Potential Solution

- Video VSDs
- Capitalize on evidence that:
  - (1) video prompting interventions support learning of new skills
  - (2) VSDs provide **contextual** support for communication
  - (3) Capture dynamic routines that support communication in real world vocational and community settings



Method – Research Design and Participant

- Research Design: Single-subject multiple probe across activities

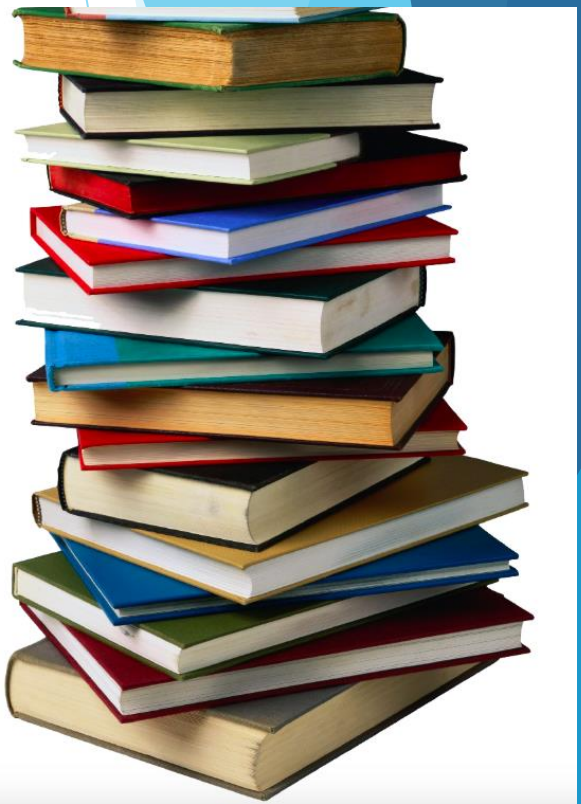
- Participant: James, 18yrs, ASD

Methods - Setting and Activity

- Working at the library
  - Local elementary school

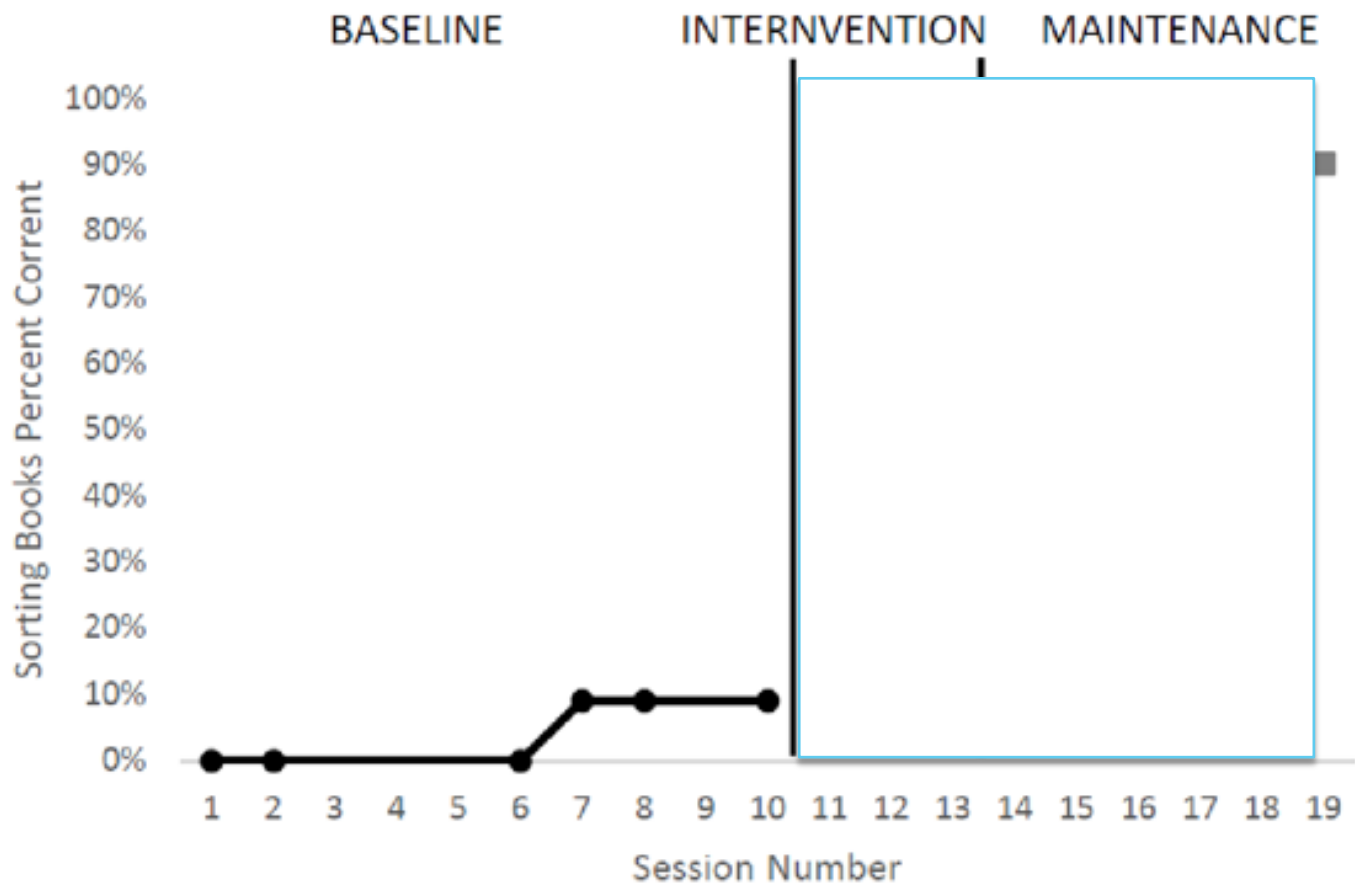
Task Analysis: Putting Books Away

1. Ask to put the books away: *Can I put the books away?*
2. Pick up the box of books
3. Bring the box to the table
4. Empty the books on to the table
5. Sort the books into piles based on categories
6. Ask a staff member to check your work: *Can you check my work?*
7. Tell a staff member you are going to put the books away: *I'm going to put the books on the shelf.*
8. Pick up the books and take them to the bookshelves
9. Put the books in the correct place on the shelf
10. Return the box
11. Tell a staff member you are finished: *I am finished putting the books away.*



Results: Putting Away Books/Sorting

- Baseline: = 5% over 6 baseline sessions

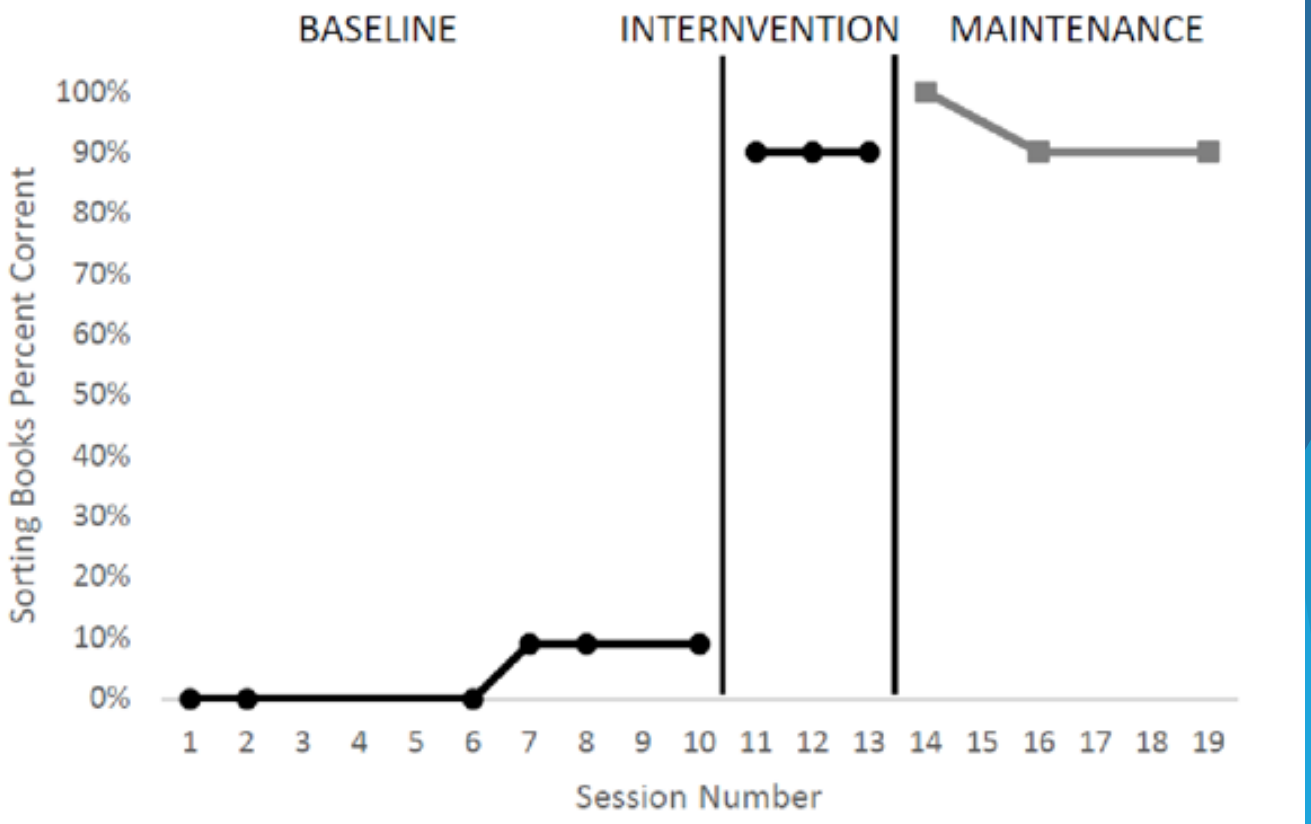


Video: Putting Away Books Baseline

Video: Putting Away Books Intervention

Results: Putting Away Books/Sorting

- Intervention = average of 90% across 3 sessions



Clinical Implications

- Task Analysis
- Video Prompting
- Communication Supports
  - Integrated together

Wrap up & Questions

Visual Scene Displays (VSDs) – Clinical Applications of Research

- Can be used to support a number of areas:
  - Communication
  - Play
  - Literacy
  - Work
  - Training/Communication Partners
- Can be low-tech, high-tech, and include video or not
- Can help integrate task, communication, and activity

For more ideas, check out some of the panelists' published intervention research using VSDs:

- Babb, S., McNaughton, D., Light, J., Caron, J., Wydner, K., & Jung, S. (2020). Using AAC video visual scene displays to increase participation and communication within a volunteer activity for adolescents with complex communication needs. *Augmentative and Alternative Communication*, 1-12.
- Caron, J., Holyfield, C., Light, J., & McNaughton, D. (2018). "What Have You Been Doing?": Supporting Displaced Talk Through Augmentative and Alternative Communication Video Visual Scene Display Technology. *Perspectives of the ASHA Special Interest Groups*, *3*(12), 123-135.
- Holyfield, C., Caron, J., Light, J., & McNaughton, D. (2019). Effect of video embedded with hotspots with dynamic text on single-word recognition by children with multiple disabilities. *Journal of Developmental and Physical Disabilities*, *31*, 727-740.
- Muttiah, N., Drager, K. D., Beale, B., Bongo, H., & Riley, L. (2019). The Effects of an Intervention Using Low-Tech Visual Scene Displays and Aided Modeling With Young Children With Complex Communication Needs. *Topics in Early Childhood Special Education*, 0271121419844825.
- Laubscher, E., Light, J., & McNaughton, D. (2019). Effect of an application with video visual scene displays on communication during play: pilot study of a child with autism spectrum disorder and a peer. *Augmentative and Alternative Communication*, *35*, 299-308.
- Therrien, M. C., & Light, J. (2016). Using the iPad to facilitate interaction between preschool children who use AAC and their peers. *Augmentative and Alternative Communication*, *32*, 163-174.

Thank you to all our participants and lab members/collaborators!

Discussion (Q&A)

Type questions in the chat box

Attainment Company

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International Society for Augmentative and Alternative Communication

ISAAC 2020 CANCÚN MÉXICO
COMMUNICATION BEYOND BORDERS
COMUNICACIÓN SIN FRONTERAS
JULY 31 - AUGUST 5, 2021

Thank you for attending and to our incredible Research Panelists

PRESENTERS


Salena Babb, Ph.D., M.Ed.
Adjunct Professor at Messiah University


Christine Holyfield, Ph.D., CCC-SLP
Assistant Professor at University of Arkansas


Jessica Caron, Ph.D. CCC-SLP
Assistant Professor at Penn State University


Emily Laubscher, M.S. CCC-SLP
ABD, at Penn State University


Nimisha Muttiah, Ph.D. CCC-SLP
Senior Lecturer II, University of Kelaniay, Ragama, Sri Lanka


Michelle Therrien, Ph.D. CCC-SLP
Assistant Professor at Florida State University

MODERATOR Jessica Gosnell Caron, Ph.D. CCC-SLP

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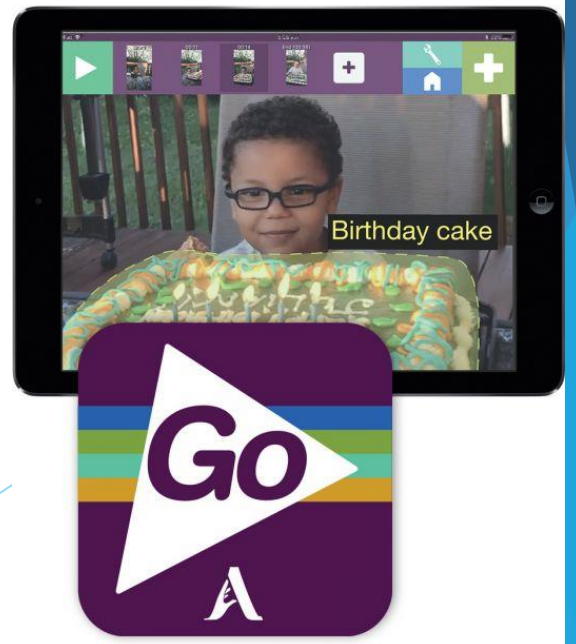


AAC AWARENESS MONTH
OCTOBER 2020 | #AACaware20
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ISAAC is pleased to announce that **ISAAC 2020**, the 19th Biennial Conference of the International Society for Augmentative and Alternative Communication, has been rescheduled for 2021. As originally 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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