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CONTINUED American Board of Child Language & Language Disorders

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Improving Expository Language through Intervention on Note-Taking and Verbal Rehearsal: A Researcher-Clinician Collaboration

Teresa Ukrainetz, PhD, S-LP(C); Amy Peterson, MS, CCC-SLP; RJ Risueno

Moderated by: Amy Hansen, MA, CCC-SLP, Managing Editor, SpeechPathology.com



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Improving Expository Language through Intervention on Note-Taking and Verbal Rehearsal:

A Researcher-Clinician Collaboration

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Utah State University

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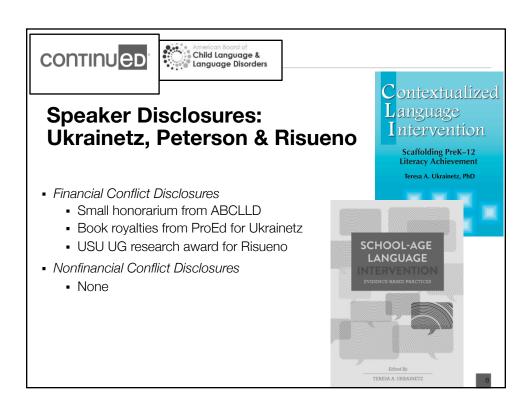




Learning Objectives

After this course, participants will be able to:

- Explain how to teach pictography and bulleted note-taking with expository texts.
- Explain how verbal rehearsal can be used to improve expository language.
- Explain how to promote use of note-taking and verbal rehearsal as learning strategies.







The Research Team

Catherine Ross, MS, CCC-SLP Retired to Florida ©

UWyo and USU Research Assistants

Riley Dolezal Haley Hight Kristin Fitzgerald Nicole Pearson Tristin Hampshire Megan Keate (not pictured)



The LCSD1 SLPs and Schools

Amy Peterson – Alta Vista

McKenzie Wulf - Baggs

Wendy Albert - Cole

Mila Rogers - Dildine

Sue Fornstrom - Freedom

Michelle Kirkbride – Freedom

Sue Carpenter – Henderson

Amy Salsgiver - Meadowlark

Michelle Rossman - Prairie Wind

Gwen Stout - Rossman

Erika Patton - Saddle Ridge



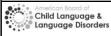


What Happens as Children With Language Impairment Get Older?

- Talking and listening → reading and writing
- Language impairment → learning disability
 - >50% SLI in K → RD or poor readers & writers

(Conti-Ramsden et al., 2012; Dockrell et al., 2009; Nippold, 2017; Scott & Windsor, 2000)





Intervention for Older Students

Strong evidence that explicit, systematic, individualized instruction can improve reading and writing

(Kamil et al., 2008; Mason, 2013; Mason et al., 2011; Swanson et al., 2014; c.f. Ukrainetz, 2015a, Ch. 15)

But who does it?





What isn't language?

- The lines don't exist almost between any of our jobs anymore
- What I see happen in the resource room is that they're not taught any strategies, they're just taught how to maintain. You've got a test coming up, let's all study... But as far as a strategy to help them on the next test, I don't see that the resource teachers have any time for that. They're doing all they can do to just to help the kids pass. Whereas I can have time to teach them the strategy that they may eventually use. Nobody else is doing that.
- Great because we can go in there and ask her [the SLP] things, she figures out things, she can analyze something

Ukrainetz & Fresquez (2003)



SLPs as Learning Interventionists

- SLP Orientation
 - Individualized problem-solving orientation
 - Underlying processes, skills, & strategies
 - Freedom from but connected to classroom & curriculum
- SLP Instruction
 - Oral & written language through talking & listening
 - Systematic, individualized tx for select skills
 - Repeated opps for learning and practice
- SLP Service Delivery
 - Pull-out for focused learning and practice
 - In-class for application and automation

(Ukrainetz, 2015a; 2015b; 2016)

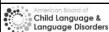




The Research Program

- Distinctive SLP interventions beyond third grade
 - Individualized oral interventions
 - Not enrichment or assistance
 - Specific language skills and learning strategies
 - Simple, systematic procedures
- Student & teacher buy-in
 - Fairly rapid, noticeable change
 - Connected to classroom and curriculum
 - For more independent, competent learners
- Improving EBP = Clinical expertise, client values, and research evidence





How About Note-Taking (& Use) As Tx Goal(s)?

- Taking notes
 - Select info from whole
 - Reduce to key words & phrases
 - Minimize writing, punctuation, spelling
 - Transform to icons, diagrams, graphs
 - Organize into categories
- Using notes
 - Expand into full, well-formed sentences
 - Paraphrase and summarize from source
 - Compose into own text product





Notes for Learning - Don't Just Copy

Lexically abbreviate Syntactically condense Physically transform

Elaborate Reorganize Retrieve

(Arnold et al., 2017; Chang & Ku, 2015; McDaniel et al., 2009; Piolat, 2005)

Note-takers who actively reduce, transform, and retrieve info show stronger lecture and reading comprehension and recall

(Boyle & Rivera, 2012; Kobayashi, 2006)



Verbatim vs. Paraphrase

But verbatim sounds so good?!

- Summarized and paraphrased notes > verbatim notes and notes following text order
 - Explicit, inferential, and integrative learning
 - Immediate and 1-wk delayed recall
 (Bretzing & Kulhavy, 1979; Slotte & Lonka, 1999)
- Student verbatim a give-away on non-understanding!
 Ought to be rare (and cited, "XXX" p.X)





But Good Note-Taking is Hard

- Students across grades and achievement levels
 - Take incomplete notes
 - Miss important ideas
 - Write verbatim notes
 - Mix up important, minor, and tangential ideas

(Boyle & Forchelli, 2014; Chang & Ku, 2015; Hebert et al., 2014)

 Students with learning disabilities additionally challenged with mechanics of spelling and decoding



Note-Taking Instruction

- Formatted notes and incidental tips but typically little formal instruction
- Systematic reviews of instruction research

(Kobayashi, 2006; Boyle & Rivera, 2012)

- Helps note-taking form and content
- Helps comprehension, retention, & expression
- Mostly older students
- But also younger and LD
 - Poor readers show largest gains
 - Some success with 3rd 5th grade
 (e.g., Chan & Ku, 2015; Lee et al., 2008; Laidlaw et al., 1993)





Using Notes: Add Self-Talk

3R: Read-Recite-Review

(McDaniel et al., 2009)

- Do not just re-read your notes quizz yourself!
- Read text, set text aside, recite ideas out loud
- Read text again, assess yourself
- Group experiment: 3R vs. re-reading vs. note-taking
 - College students
 - Literal and integrative comprehension
 - Immediately after reading and after 1-week interval
 - Read-recite-review the winner!
 - Note-taking 2nd place, but slower



What We Have Investigated – So Far

- 1. Use note-taking and oral practice as teaching strategies
 - SLP tools to improve tx topic learning & language
 - SLP perceptions of benefit
- 2. Teach note-taking and oral practice as learning strategies
 - Student tools to help their own learning & language
 - Immediate use & benefit on different subject area texts
 - Compared to no-tx controls





Writing-to-learn + Talking-to-learn = SLP Tx?

- Note-taking tx
 - Bulleted notes are short & quick
 - Plus a special way of note-taking
- Talk in tx
 - Elicit, model, expand, revise, and confirm learning
 - Students reciting sentences from their notes

Ukrainetz and Ross start on this path... Ukrainetz, Peterson and Risueno continue the journey...

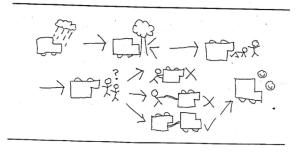


Alternative Notation: Pictography

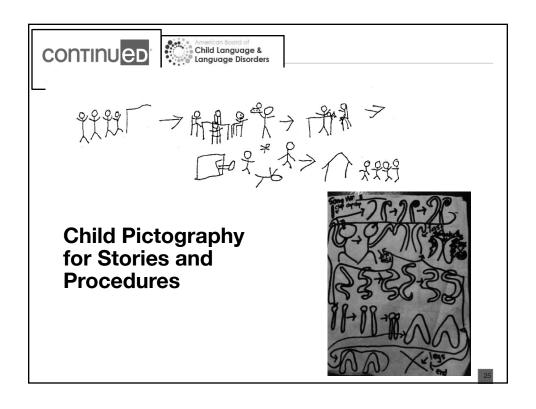
Story planning & recall

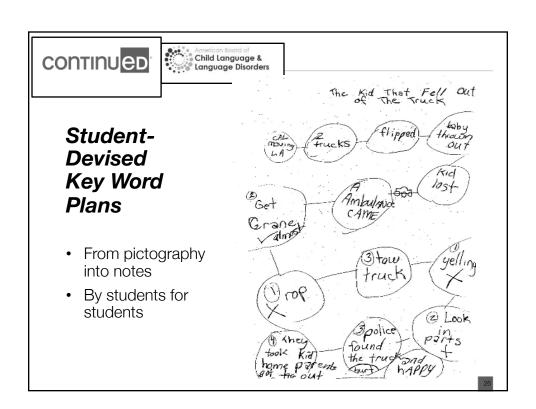
- Quick & easy, just enough to remember
- Pictog > write/draw for length & quality (McFadden, 1998; Ukrainetz, 1998)
- In narrative txs (Petersen et al., 2014; Gillam et al., 2018)

c.f. Ukrainetz, 2015a, Ch. 9













Sketch & Speak: Note-Taking & Oral Practice Tx

Shared reading → Say it simply →
Sketch it simply → Say it fully →
Say it simply → Note it simply →
Say it fully → Write it fully

- 1. Quick & easy **pictography** of ideas extracted from text
- 2. Turned into concise, informative bulleted notes
- 3. With repeated oral practice of sentences



Study #1:

Can SLPs Improve Students' Note Taking and Use – Quickly & Easily?





Sketch & Speak Tx: Group Experimental Study

What is the effect of 3 hrs of tx with science texts?

- For gr4-6 with language-related LD
- Vs. no-tx control condition
- On outcomes using history texts?
 - 1. Notes
 - 2. Oral reports
 - 3. Written reports
 - + Perceptions from SLP instructors

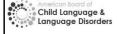


Participants

- 44 4th-6th graders from 9 schools
 - IEP with oral language, reading, or writing services
 - SLI, SLD, OHI
 - No intellectual disability, autism, emotional disability
- Assignment
 - Randomly assigned to tx or control conditions
 - Balanced (mostly)
 - Grade & CELF5 core language
 - IEP services, gender, ethnicity, free/red lunch
 - With 1-5 tx participants per school



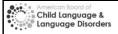




Treatment Procedure

- 3 hrs of Sketch-and-Speak tx
 - 9 school SLP instructors
 - 2x/wk of six 30-min indiv or pair sessions
 - Regular or specially scheduled
 - Grade-level unusual animal articles
 - 2-column note form
- SLP training & fidelity
 - 3 group sessions
 - Practiced with non-study student
 - Tx observed and tweaked in first week
 - 1+ participant per SLP audio recorded







Tx Articles

 The cassowary is a species of large flightless bird. It is found in northeastern Australia and the island of New Guinea. The cassowary is closely related to emus and ostriches. It is the third tallest and second heaviest bird in the world...

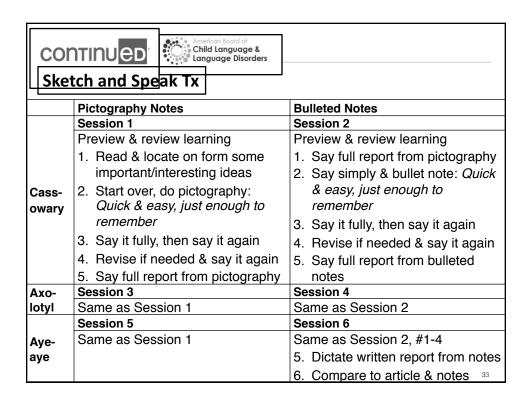


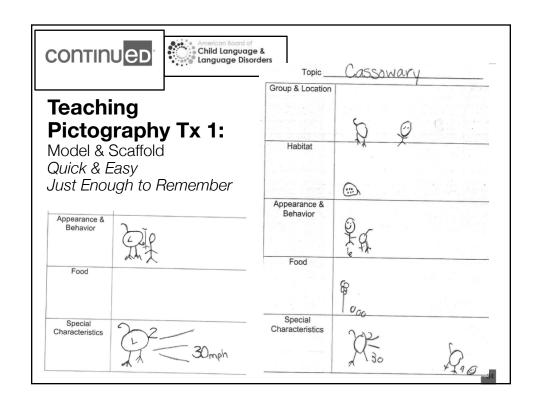
 The axolotl, or Mexican salamander is found naturally only in two connected lakes in southcentral Mexico. It is also kept as a popular freshwater aquarium pet. Axolotls are sometimes called Mexican walking fish because they look like fish with legs...



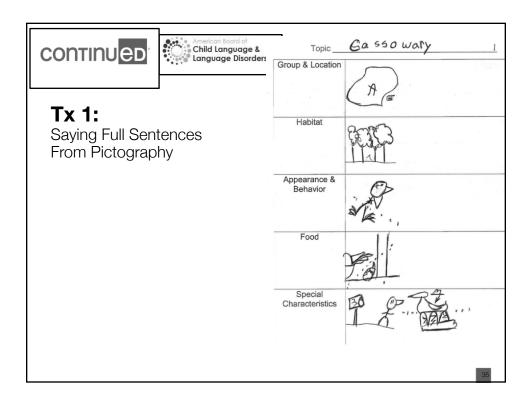
The **aye-aye** is a species of lemur that inhabits the rainforests of Madagascar. Madagascar is a huge island near the southeast coast of Africa. The Aye-Aye is the world's largest nocturnal primate. They are not dangerous, but are feared by local people...

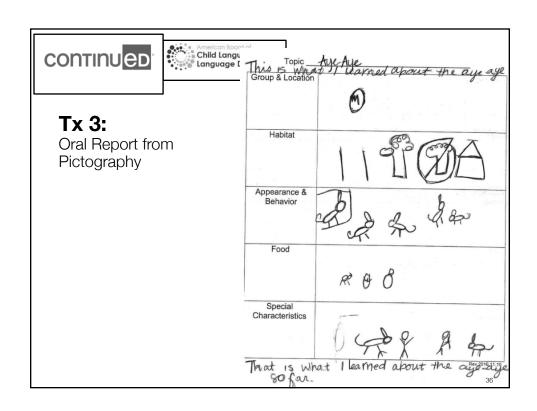




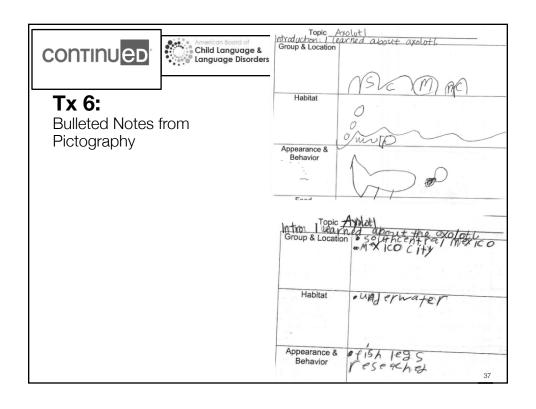


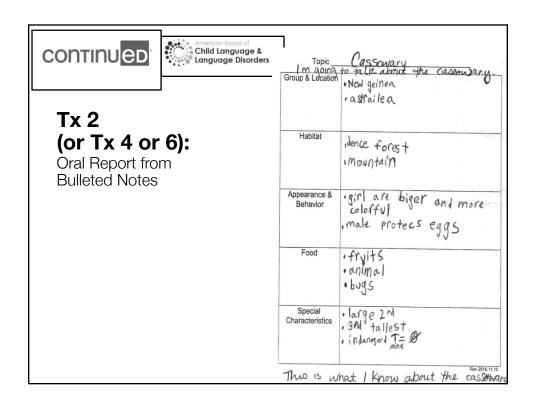
















Testing Procedure

- Individual pretest & post-test sessions
 - Pre 1: CELF Core Language
 - Pre 2: Apache/Inca notes on 2-col form & oral report
 Post 1: Inca/Apache notes on 2-col form & oral report
 - Post 2: Written report & comprehension test
 - Audio-rec sessions & video-rec oral reports
- Testers
 - Trained UG RAs from UWyo & USU
 - Blind to tx condition
- Plus SLP instructor reflection essays after tx



Test Articles – Historical Peoples

Apache Nation

The Apache are one of the most famous Native American groups in the United States. Apaches were known as skilled horsemen and fearsome fighters...

Inca Empire

The Inca Empire was the largest kingdom in ancient times on the American continent. It covered the country of Peru and parts of Ecuador, Bolivia, Argentina, Chile, and Columbia...

850 lexile, 503 words

http://www.readworks.org/ https://lexile.com/analyzer/





1. Topic

- 3 = Relevant topic at top
- 2 = Topic identified in first item only
- 1 = Topic ided other than only in first item
- 0 = Topic not identified or incorrect

2. Bullets (Good) & Periods (Bad)

- 3 = All items initiated with bullets and no items use periods (! or ? ok)
- 2 = >half items bullets, regardless of periods
- 1 = Some bullets or >half no periods
- 0 = No items have bullets

3. Quick & Easy

- 3 = All brief items, info dense: lists, phrases, key words, abbrevs, sgw omitted, short sents, no category repetition
- 2 = >half brief or reduced items
- 1 = Half or fewer brief or reduced items
- 0 = No brief items

4. Use Your Own Words

- 3 = All own sentences or built from source sentences; no verbatimish sentences
- 2 = >half own sentences
- 1 = Half or fewer own sentences
- 0 = No own sentences



1. Important & Interesting Ideas

- 3 = 9+ different items; 2 items for distinct multi-idea sentence even if verbatim
- 2 = 6-8 items
- 1 = 3-5 items
- 0 = 2- items

Notes Rubric - Form

Notes Rubric - Content

2. Just Enough to Remember

- 3 = All items clear enough to generate sentence from categ and note
- 2 = 1 confusing or inadequate item
- 1 = 2 confusing or inadequate items
- 0 = 3+ confusing or inadequate items

3. Use the Categories to Select and Organize

- 3 = 4+ categs have info and info fits categs
- 2 = 3 categories have info that fits
- 1 = 2 categories have info that fits
- 0 = 1 or 0 category has info that fits

4. From the Article

- 3 = All info matches source even if unclear
- 2 = 1 idea not from source
- 1 = 2 ideas not from source
- 0 = 3+ ideas not from source

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Oral & Written Report Features

- · Transcribed C-units (sentences) on SALT
- Longer & more complex ≠ better learning
- Coded for quality features & relations to notes

Good:

- 1. Open/Close statements
- 2. Full sentences
- **3. Modified** from notes

Not-so-good:

- 1. **Verbatim** from source
- **2. Category** labels not in sentences
- 3. Extraneous comments

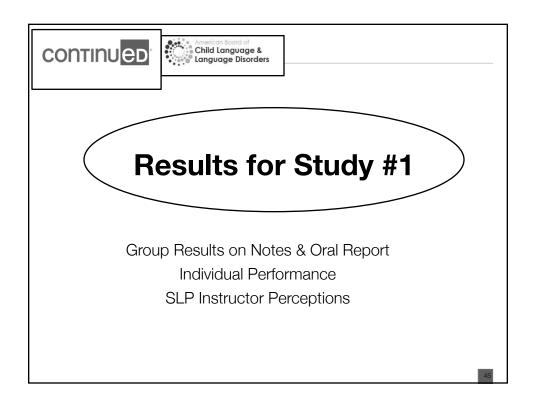


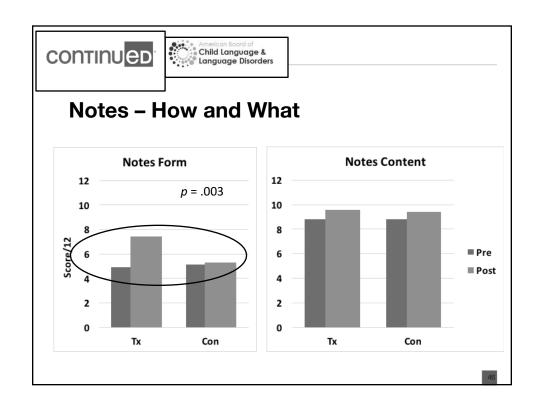
Pre/Post Oral Report Holistic Comparison

- Overall quality of pre/post videos for each participant
 - Three RA raters blinded to pre/post status
 - Familiar with source articles

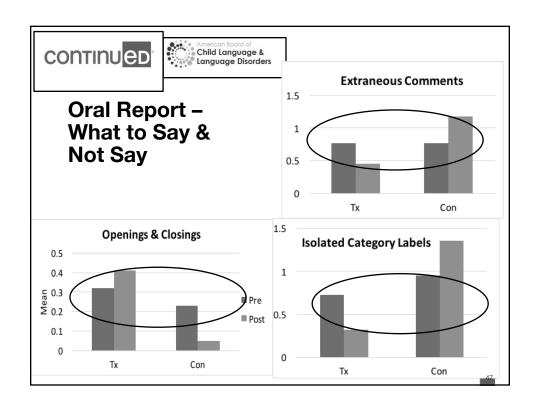
Quality of Oral Report Presentation				
Apache is substantially better	Apache is slightly better	Apache & Inca are similar in quality	Inca is slightly better	Inca is substantially better
2-3 Reasons:				

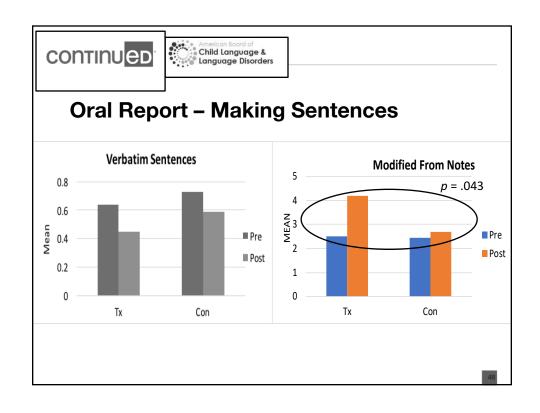














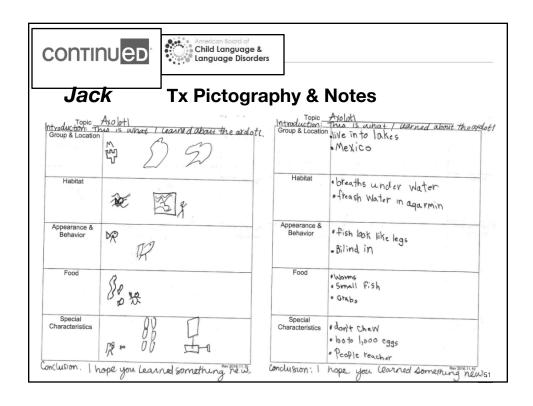


Beyond Group Averages

- Jack Achieving learning & change
- **Donal** Pictographic Notes Strategy
- **Tyrone** Learning Strategies & Self-Regulation

continued:	American Board of Child Language Language Disor	e & ders
Jack- Learning	Historical Time & Area	The Apache frist came to Arizona New Mexico West texas and Sothern Colorado,
& Change	Events & Activities	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Pretest Tx	Shelter & Transportation	They teepers they were made be gall stick and made it shall as a cone and covered it if a big sheet
Posttest	Treferred Foods	they gater roots and berries
	Special Features	50







Jack Final Dictated Report in Tx

This is what I learned about the axolotl.

The axolotl lives in two lakes in Mexico. The axolotl breathes underwater. Also the axolotl lives in fresh water in an aquarium. Axolotl looks like a fish that has legs. And the axolotl blends in to stuff because of its camouflage.

The axolotl eats worms small fish and crabs. The axolotl don't chew their food but they suck it whole.

The axolotl female lays about one hundred eggs to one thousand eggs. People research about the axolotl.

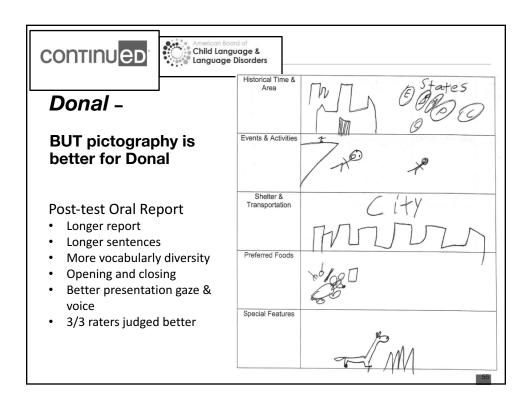
I hope you learned something new.

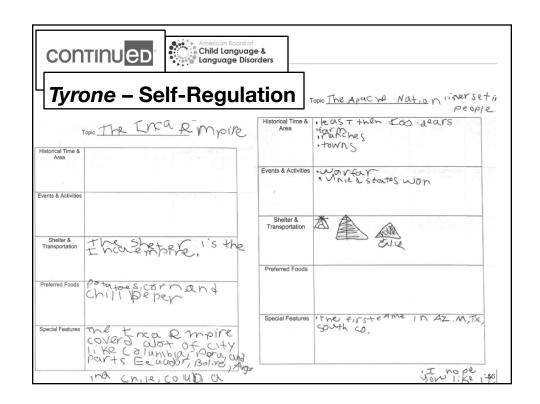


contil	American Child Lo	i Board of anguage & ige Disorders
Historical Time & Area	They fight badtiles	Jack Posttest Notes & Written Report
Events & Activities	The Inchire was the tingdom.	In Historical time they fight badtiles and the incpire was the largest kingdom.
Shelter & Transportation	Inca Emfire	thier Shelter Was Inca Empire. The eat Varieties of Potatoes, corn, and Chill Peppers in thier high Mountain gardens and they Push People off of Ciffs.
Preferred Foods	they eat Varieties of and Chili Peppers in this Mountain gardens	Potatoes, Corn er high
Special Features	They Push People of	f of ciffs 53

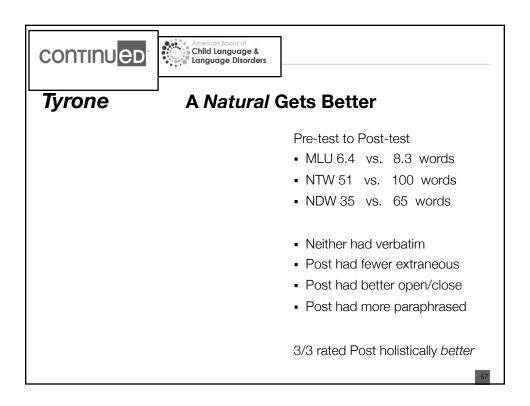
CONTINUED American Bo	juage &	
Donal –	Historical Time & Area	horsemen, fearsome fighters,
Pictography Strategy	Events & Activities	na-dee Hunting
Pre-test	Shelter & Transportation	teepes wickiupsand
written notes >	Preferred Foods	rootsand benries
	Special Features	Apache

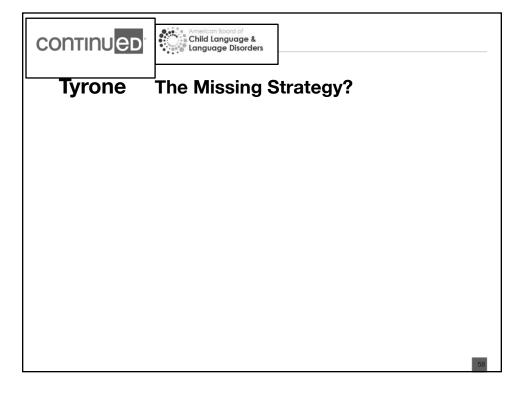














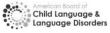


SLP Instructors

Reflections on Sketch-and-Speak TX

- Using teaching strategies of:
 - 1. Pictography
 - 2. Bulleted notes
 - Oral practice
- To improve comprehension & expression of challenging expository texts on unusual animals



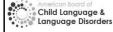


Why The Tx Benefit? Simplicity and Quick & Easy Visuals

- It isn't complicated. Students appeared to quickly grasp how the process worked. This seems crucial to the idea of carry over. If they are going to be using this strategy on their own, it has to be simple enough to remember and not require significant materials
- With the focus on 'quick and easy, just enough to remember,' many of my students who typically lose focus were more able to come up with a picture or a few words to use for their notes
- Pictography strategy helped kids remember the meanings of words such as "nocturnal" and "amphibian"



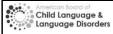




Why The Benefit? Repetition & Ownership

- Once a well-formed sentence was established, the student took ownership of the sentence and successfully implemented these complete sentences in well-formed oral reports.
- The repeated oral practice appeared to build confidence. When initially starting the study, the students were overwhelmed by the length and complexity of the articles.
- With the repetition and strategies, by the third article, each student was eager to not only tackle the article and learn about the interesting animal, they also immediately identified details with more independence and overall confidence.





Why the Benefit? Oral Practice

- The benefit of the student's continued repeated practice of complete sentences was eye opening...The more practice they received, the more complex their sentences appeared to become.
- The oral practice phase. A concept I grasped well for younger learners... I was failing to understand how this concept looked for older students. The oral practice piece of this intervention was the answer and it makes so much sense.
- Having the student practice the full sentence until a good grammatical sentence was achieved...it paid off for the students when giving the full report.





Why the Benefit? Classroom Connections

- Bridge some gaps between the tx setting and actual classroom skills and assignments...potential to positively change my delivery of services for the intermediate population
- Collaborating with teachers about an upcoming project, using the classroom resources in therapy, and using this strategy to create the finished project would be incredibly helpful and successful



Study #1 Conclusion

- For independent performance on non-taught texts, compared to notx controls
 - Significantly better note form and paraphrasing
 - · Hints of other improvements for notes & reports
- 2. For scaffolded practiced performance on taught texts, SLPs say:
 - · Better comprehension, expression, engagement, & ownership
 - · Simple, practical treatment that makes sense





Study #2:

Will strategy use improve if we change the treatment a bit?

- Extend the tx time
- · Increase emphasis on oral practice
- Call it "rehearsal"
- · Coach students into more independent use



Descriptive Case Study

Participants

- Two 4th graders (Pete & Angel) & one 6th grader (Steph)
- With language impairment
- SLP instructor, LCSD, Cheyenne WY

Pre/Post Testing

Pre = Inca Post = Apache

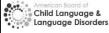
Session 1 Session 2

Shared reading Written report from notes

Take notes Learner Interview
Oral report from notes + SLP perceptions







Same Core Sketch & Speak Tx

Shared reading → Say it simply → Sketch it simply → Say it fully → Say it simply → Note it simply → Say it fully → Write it fully

- Quick & easy **pictography** of ideas from text
- Turned into concise, informative **bulleted notes**
- With repeated **oral practice** of sentences & reports



Sketch & Speak Tx 2nd Try

Six hrs in 10 wks 16 20-min sessions

S1-8 = Study #1

- · Pictography & oral practice
- · Bulleted notes & oral practice
- · Two animal articles
- · Sentences and report
- · Lots of scaffolding











The New Tx: Promoting Strategy Use

S9-10, Article #3

- · Choice of notation
- · Verbal rehearsal
- · Less scaffolding

S11: Classroom #1 Presentation

- Choice of report with existing notes
- Whisper rehearsal

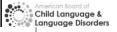
S12-13: Animal Brochure

- Dictate sentences from existing notes
- Notes & oral practice → written report



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continued





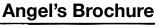
Aye-Aye

You want to learn about an ave-ave? An aye-aye is a special animal that lives in Madagascar. They switch nests every day. They live in high trees. They live in tropical rainforests. Their appearance and behavior is that the mother aye-aye nurses the baby aye-aye until it is seven months old. They hang from high trees and they have claws that connect to their long fingers. Their food is that they eat eggs and bugs. Their special characteristic is that people think that just looking at an aye-aye could kill them, but luckily, they have a special island just for aye-ayes. Only the people that want to save them can visit there. But, the people that want to kill them cannot visit there. Next time it will be a different animal.



Cassowary

You want to learn about a cassowary? A cassowary is a large, flightless bird. It lives in the island of Australia and the gold miners are trying to destroy their home just for gold. Their habitat is that they live in a large forest. They lay up to 3 to 8 eggs and they have a nest on the ground. Their appearance is that they have sharp claws and toes. They have a wattle on their neck. Their food is that they eat mice, snakes, bugs, and fruit. Their special characteristics are that they can run up to 30 miles per hour. They swallow their fruit whole. That's all you need to know about the cassowary.





Axolotl

You want to learn about an axoloti? An axolotl is a fish with legs. It lives in Mexico. The axolotl does not go through metamorphosis. Their habitat is that they live underwater and they live in two connected lakes. Their behavior is that they live up to 25 years. Their appearance is that they have gold speckles. Their food is that they vacuum up worms and they also eat small fish. Two special characteristics are that if they lose their legs, they will regenerate back and they can also be in camouflage. And that's all you need to know about an axolotl.

70





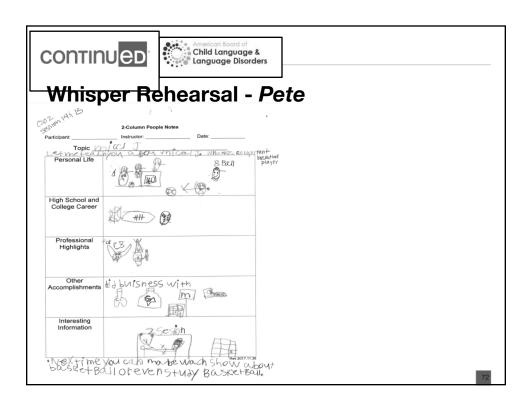
On the Way to Independence

S14-15: MJ article

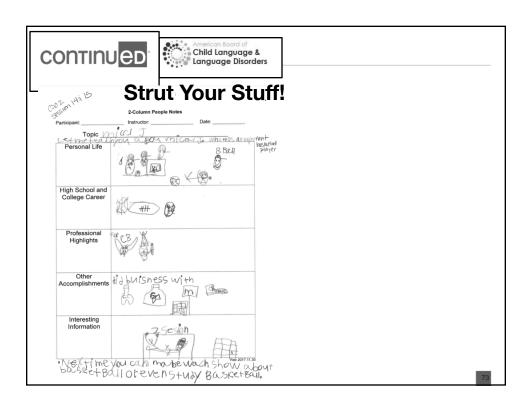
- Notes & verbal rehearsal
- Minimal scaffolding

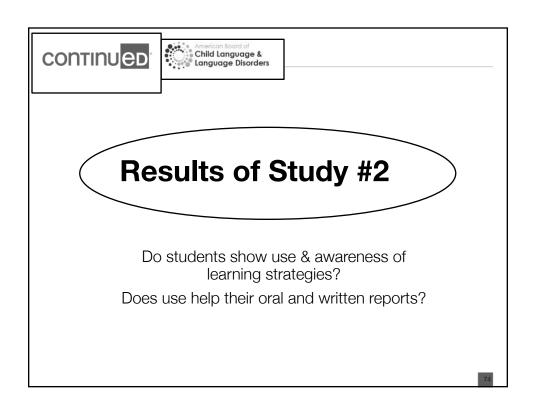
S16: Classroom #2 Presentation

- Choice of report notes
- Independent whisper rehearsal
- Demo three strategies to peers and teachers













Notes: Form and Content

Form /12	Steph	Pete	Angel
Pre	6	9	2
Post	8	9	5
Notation	Notes	Pictography	Notes

Content /12	Steph	Pete	Angel
Pre	9	8	2
Post	11	8	7
Notation	Notes	Pictography	Notes

2/3 better

1 not better

But pretest pictography??



Quality of Oral and Written Reports Which is better, Apache or Inca presentation? Why?

Oral report?

- Both raters chose Steph's and Pete's post-test reports
- One rater chose Angel's post-test report

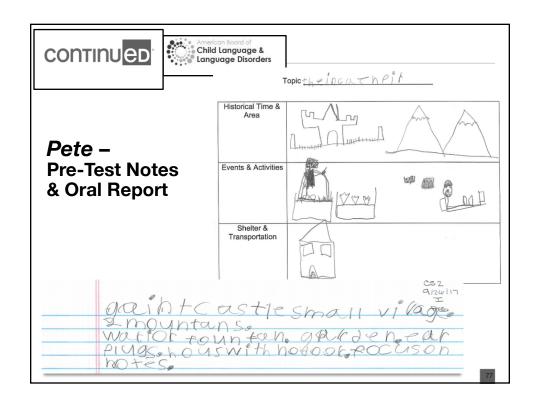
Written report?

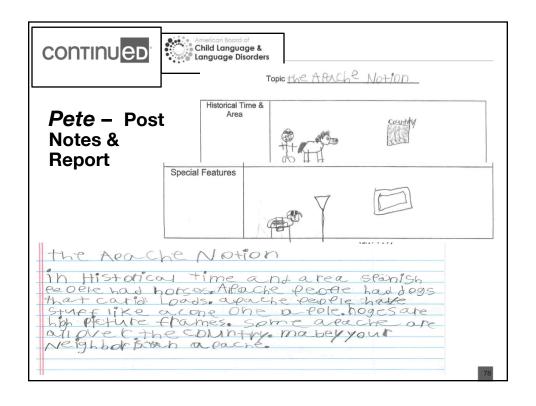
Both raters chose everyone's post-test reports

Why did the raters like the post-tests?

• More academic, organized, cohesive, confident











Learner Interview: Did you say anything in your head as you took notes?

Angel ©

<u>Pre</u>: Well, when you were reading it, well I said in my head that I didn't know about the empire was the largest kingdom.

<u>Post</u>: I was saying in my head, "What should I write?" or "What should I do, like bulleted notes or pictography?"



Did you say anything in your head as you took notes?

Steph ©

<u>Pre:</u> It was kind of hard and easy 'cause I was reading the paper and then I was thinking in my mind, "Is that a place or something that will happen?"

Post: When I'm writing I whisper it to myself and then I have to show it to you.

Pete ⊗

Pre: No.

Post: I don't know.







Amy - The SLP's View?

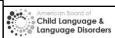


We did the end of session 16 for Pete and Angel in front of their whole class together. It was so powerful and the kids were so impressed!

Steph said, 'I am just excited to teach people about stuff!' He also said he wants to practice verbal rehearsal and note-taking for class projects and when I asked him to tell a peer what he learned, the first things he said were verbal and whisper rehearsal.

My principal was so floored by my work that he wants me to present to the Wyo Dept of Education and the school district board.





Study #2 Conclusion

- 1. Independent performance on non-taught texts
 - Three gr 4-6 students with language impairment
 - Short-term use as learning strategy
 - Clear benefits logically linked to strategy tx
- 2. SLP likes it as a tx strategy
 - Second time using it, still likes it ©
 - Simple, practical, and flexible core tx elements
 - Noticeable changes for students and teachers
 - Rewarding participation

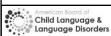




Sketch & Speak Tx: Note It Simply - Say It Fully

- · Pictography, bulleted notes, verbal rehearsal
- · Practical, flexible SLP treatment
- For oral and written language and learning
- · Academic relevance, noticeable gains
- Student & SLP buy-in
- Next steps: Tighter research procedures, compare to alternate txs, more tx of strategy use





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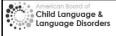
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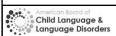
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