

Speech to Print

Young children are not hardwired for print (symbols, writing, reading)

begins with speech sounds: *phonemic awareness* ("the ability to segment words into their component sounds, which are called phonemes" and connect speech sounds to spelling patterns).

a speech-to-print approach begins with hearing the word, isolating the sounds within the word (*phonemic awareness*), learning the relationship between the sounds and letters (*sound-symbol association*), and manipulating the sounds and letters sequentially in order to read and spell new words. (Sandie Barrie Blackley- Lexercise)

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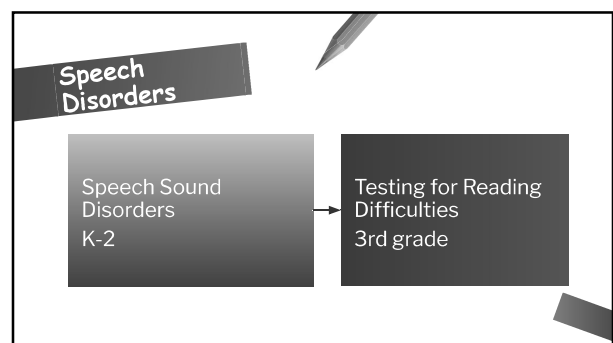
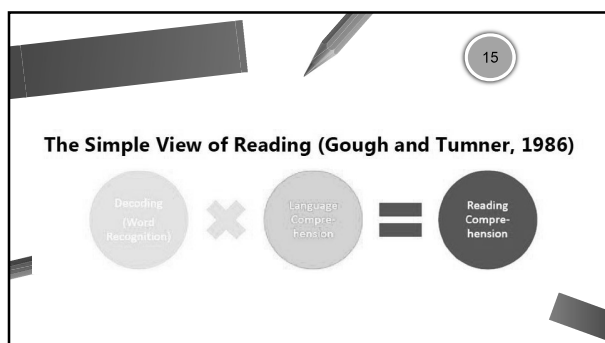
Importance of Oral Language: Speech to Print

Young children are hardwired for language. They can discriminate sounds as they listen to words.

rip
milk
flip
sit
kitten

met
fed
leg
vet
check

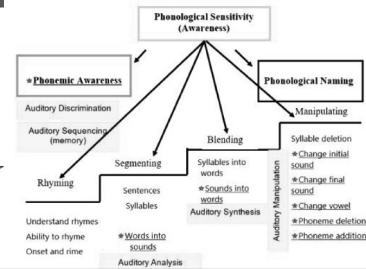
cat
sat
cap
rat
apple



Reflection

1. What speech sound errors do you see mostly with young children?
2. What phonological processing errors do you see mostly?

Breakdown PA Skills



Phonology and Speech

1. Numerous studies have documented that children with SSD are more likely to display lower performance on measures of reading and spelling than are children with typical speech abilities (Bishop & Adams, 1990; Catts, 1993; Peterson, Pennington, Shriberg, & Boada, 2009)
2. Speech production is heavily reliant on an intact phonological system.

3. Children with speech sound disorder have shown deficits for a variety of other phonological tasks, including phonological awareness (Bird, Bishop, & Freeman, 1995; Carroll & Snowling, 2004; Preston, Hull, & Edwards, 2013; Rvachew & Grawburg, 2006), phonological memory (Couture & McCauley, 2000; Farquharson, Hogan, & Bernthal, 2017; Munson, Edwards, & Beckman, 2005), spelling (Bird et al., 1995; Carroll & Snowling, 2004; Clarke-Klein & Hodson, 1995), and word reading itself (Apel & Lawrence, 2011; Overby, Trainin, Smit, Bernthal, & Nelson, 2012).

4. Kirk and Gillon (2007) provided an integrated speech, phonemic awareness, and letter knowledge intervention approach to children with SSD. They found that children who received an intervention that facilitated phonemic awareness and letter knowledge in addition to speech sound production outperformed children who received an intervention for speech sound production alone.

5. Children whose speech production problems persist until age 6; 9 perform worse on tests of reading, spelling, and phonological awareness than controls matched for age and performance IQ (Nathan et al., 2004).

6. Studies indicate that at age 4, children with speech delay are at higher risk for impaired phonological awareness skills

Mastery of Skills

<https://www.readingrockets.org/article/development-phonological-skills>

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students have achieved a phonological skill

Age	Skills	Sample Tasks
4	Know initial and endpoint of rhyme and alliteration	Identify rhymes, beat patterns, and rhyming words in songs
5	Rhyme recognition, add word out	Which two words rhyme: <i>shy, shed, sheep?</i>
6	Recognition of phonemic changes in words	Voluntary Delivery Clerk: That's not your
7	Clapping, counting syllables	break (1 syllable) butter (2 syllables) beat (1 syllable) antennae (3 syllables)
8	Distinguishing and resegmenting separate phonemes in a word	Show recognition of single phonemes with colored blocks: /p/ /t/ /d/ /g/
9	Blending onset and rime	"What word?" /p/ /t/ /d/ /g/
10	Producing a rhyme	"Tell me a word that rhymes with cat."
11	Relating initial sounds (labeling as initial sound)	Say the first sound in <i>ride</i> (/r/)
12	Compound word deletion	Say <i>cowboy</i> , say it again, but don't say <i>cow</i>
13	Segment deletion	Say <i>garlands</i> , say it again, but don't say <i>and</i>
14	Blending of two and three phonemes	/p/ /t/ /d/ /g/ (said) /p/ /t/ /d/ /g/ (said) /p/ /t/ /d/ /g/ (said)
15	Phoneme representation of words that have single syllables with two or three phonemes (e.g., <i>band</i>)	Say the word <i>band</i> as you move a chip for each sound: /b/ /a/ /n/
16	Phoneme representation of words that have up to three or four phonemes (e.g., <i>bandage</i>)	Say the word <i>bandage</i> as you move a chip for each sound: /b/ /a/ /n/ /d/ /j/ /e/
17	Phoneme substitution in four two words that...	Change the /d/ in <i>band</i> to /t/...

General Ideas

**Food for Thought

Speech to Print

- When targeting speech sound disorders, always check for discrimination of ALL English phonemes.
- To support phonemic awareness skills, segment the sounds in the words and have the student say each sound and figure out the spelling pattern.
- By having the student say the sounds in words or the word, we can better judge the discrimination of each sound.
- Keep sounds very pure. For example, /b/ does not say /ba/.

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Strategies for PA & Sound/Symbol

Visual Phonics

Use the Visual Phonics program used by your school if it has gestures to go with the sounds.

https://drive.google.com/file/d/1clGiX9iTEUtKZiTaJom1qCxAA1DMW9P/view?usp=drive_link

Supporting Speech Sounds

Use the words that are being targeted in speech therapy for the words that the student will discriminate and segment. Begin with VC, CV, VCV, or CVC first. For medial sounds, start with simple VCVC or CVCV words. Once the student can discriminate and segment these, move to CCVC or CVCC. Then move to 2 syllable words.

See Google drive for examples

<https://drive.google.com/drive/folders/1HvVhBeyJvOAtThYCCCu9BPtFVnZCvz?usp=sharing>

Specific Therapy Strategies

Phonemic Awareness/Segmenting/Blending

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Examples

Example for /s/ and /z/

s/z CV	VC	CVC	s/z CVCV VCVC	s blends	s/z syllables
CV	CV	seesaw	amaze	fence	address
zoo	sew	city	zany	lips	surprise
Zoe	see	zero	dress	class	seven
	sigh	say	soft	music	
VC	saw	tacos	scout	Tuesday	
is	soy	pillows	scale	zip code	
as	sow	commas	skip		
eyes	VC	ice	skull		
ooze	VC	us	sleep		
zone	VC	ice	slip		
knees	CVC	soup	slide		
nose	sit	yes	slap		
hose	VC	face	skinny		
boys	VC	seal			
bees	VC	stick			
bows	VC	sun			
shoes	VC				
keys	VC				

Supporting Speech Sounds for Phonological Processing Therapy

Initial or Final Consonant Deletion	Fronting or Backing	Cluster Reduction
cab	ban	at
fab	can	cat
gab	San	bat
lab	fan	fat
tab	man	hat
bam	pan	mat
dam	ran	gnat
ham	tan	pat
lamb	van	rat
mam		sat
		bag
		gag
		lag
		rag
		sag
		tag
		wag
		flag
		brag
		black
		drag
		brag
		glad
		plan
		slab
		crab
		sped
		sled
		black

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Minimal Pairs

- A phoneme pair such as the /f/ and voiceless /th/ are articulated in similar (yet different) ways, and so they sound similar, but they are, in fact, acoustically different.
- These sound pairs are more difficult to distinguish than other sound pairs because the way they are spoken (articulated).
- They should be perceived and recognized by listeners as two different phonemes, even in the absence of visual cues, i.e., by listening alone" (Wasowicz, J. via SPELLTalk, On Dec 22, 2020).

Minimal Pairs

Articulation	/h/ /z/	Phonological Processing
face/phase	peace/peas	bug/bud/but/buck
race/raise	once/ones	mug/mud/mutt, muck
bus/buzz	dose/does	knot/knock/mod
fuss/fuzz	foes/toes	tap/cap/gap
ice/eyes	base/bays	key/tea/
place/plays		

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Phonemic Awareness + Letter/Sound/Retrieval

Place numbered squares on the floor. Student identifies beginning, middle and ending sounds.

1st 3rd 2nd

1 2 3

m a n

Alphabet Center

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

Consonant blends

4th

1 2 3 4

p l a n

p l a ne

p l ai n

Dominoes

rhyme

Final or medial

Activities for Phonological Awareness

SSD Link to Phonological Awareness

Include the speech sounds or phonological processes to adapt each activity. Use the following activities to target speech sound disorders in order to provide the support for students for literacy development.

Rhyming

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Which One Does Not Belong

By age 5, students should be able to state which one does not belong

Discuss the morphemes used

Increase complexity

Matching Pictures (by 5 ½ years)

Mystery Object (6 ½ years)

"It starts with /w/ and rhymes with dishes."

Example for SSD

Starts with and rhymes with s/z	Starts with and rhymes with cluster reduction
Starts with /z/ and rhymes with cones	Starts with /l/ and rhymes with tags
Starts with /s/ and rhymes with teas	Starts with /br/ and rhymes with bags
Starts with /x/ and rhymes with pays	Starts with /cr/ and rhymes with cars
Starts with /s/ and rhymes with boys	Starts with /pl/ and rhymes with pans
Starts with /s/ and rhymes with mitts	Starts with /s/ and rhymes with gabs
Starts with /h/ and rhymes with noses	Starts with /s/ or can use /br/ and rhymes with sleds
Starts with /br/ and rhymes with toys	Starts with /bl/ and rhymes with tames

Segmenting

Words in Sentences

Have the student clap for each word while reading nursery rhymes, poems, or sentences with varying length and syllables in words.

Segmenting

Syllables in Words

By age 5, students should be able to count syllables in words.

Clap out syllables moving from left to right across body.

- Begin with 2 syllable words.
- Move to 3 syllable words.
- Then, try one syllable words.
- Move to 4 syllable words.

Segmenting

Sounds in Words

By age 6, segment words with two to three phonemes without blends.

By 6 ½, segment words that have 3-4 phonemes including blends.

- Begin with continuant sounds which include fricatives (f, v, s, z, sh, zh, h, and the two /th/ sounds -ð, ð), nasals (m, n, ŋ), liquids (l, r), and vowels.
- Then, introduce a few stop sounds (p, b, d, t, k, g) that students articulate. Make sure these sounds stay pure. (/b/ does not say /ba/.)

For SSD

- Begin with continuant sounds even if you are targeting stops. This will support students in understanding segmenting.
- Then move to words that contain the sounds you are targeting.
- If targeting stop sounds like /k/ and /g/.
- Place these in the final position if possible, keeping them pure and use a continuant sound in the beginning to support segmenting (and blending).

Blending 2-3 phonemes by 6 years

Mystery Card/Object



Place a set of picture cards or small objects in a bag. Have the children take turns drawing an item from the bag; you may choose to have them keep the card or object hidden from the others. Have the child say the word in its sounds while the others guess what the word is. When the word is guessed correctly, the item is shown.

IS-P-Y

Play the familiar game "I Spy" with a different twist. For example, using the names of objects in the room, tell the children "I spy a p-e-n" and see if they can guess what it is. If the children can segment words, have them take turns choosing things to spy.

Manipulation

Children begin to isolate initial sounds by 5 ½ years of age. This is the beginning of being able to understand manipulating sounds in words. By age 6 1/2, students can substitute phonemes to build new words.

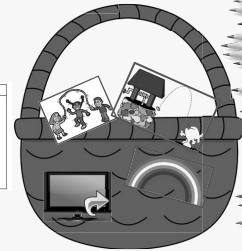
Link to SSD

Choose words that uses the speech sounds or phonological processes that are being targeted.
<https://drive.google.com/file/d/1uSn-HI8z4HbTi-8srJIEcGb2Lf2-0fm/view?usp=sharing>

Activities for Manipulation: Silly Words

Drop Off, Add, or Change

Compound Words	2 syllable words	3 syllable words
holding	season (take off sea or son)	computer (take off -er)
rainbow	raccoon	observing
snowball	reptile	invention
moonlight	inverte	subtraction
sunlight	stolen	addition
sunset	robot	division
sunshine	spoken	understand
keyboard	smiling, running, jumping	reporter
goldfish	action, fiction	carpenter



Cotton Cups

Cotton Cups

Provide each child with 10 cotton balls and a plastic cup. While reading a book to the group, occasionally leave off the first sound of some of the words. When the children notice this, they are to quietly place a cotton ball into their cup. Take a break to discuss what sound was left off, and then continue the story. When all the cotton balls are gone, make sure every child filled their cup.

Goals and Objectives

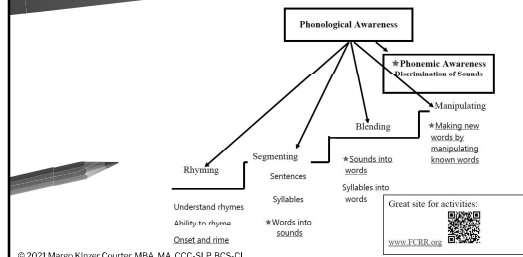
For SSD and Phonological Processes

Write goals and objectives as one would for articulation goals with adding specific progression. The activities above would be the activities used to achieve these goals.

Example Goal

At the end of the second semester, student will perceive and use initial /r/ and vocalic /r/ in words in structured activities in 8 out of 10 opportunities with minimal cueing as demonstrated through correct production.

Review



Phonology Conclusion

The ability to discriminate sounds (phonemes) correctly leads to stronger overall phonological awareness skills and speech sound identification. Incorporating PA activities with speech sound therapy, it is a win win for the student!

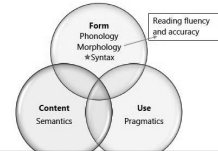
Morphology

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Using word parts and knowing some common prefixes and suffixes (affixes), base words, and root words can help students segment, blend, and manipulate words for phonology, learn the meanings of many new words, and support syntax.

Morphology and SSD

1. Preschool children who demonstrate deficits in morphology and speech demonstrated better morphosyntactic competence when it was targeted before speech sound errors (Tyler, Lewis, Haskill, 2002).



2. Children with SSD scored significantly lower than did their counterparts on the morphological awareness measures as well as on phonemic awareness, word-level reading, and spelling tasks (Apel and Lawrence, 2011).

3. Morphological awareness was a unique predictor of spelling abilities of children with speech sound disorders (Apel and Lawrence, 2011).

Steps in Morphology Instruction

Step 1 Explicit Instruction

Discuss the importance
Explain target patterns
(inflectional/derivational)

Steps in Morphology Instruction

Step 2 Intervene

Systematic and sequential instruction

Inflectional: Brown's MLU

Inflectional Morpheme	Age of Acquisition	Example	Academic Standards
Present progressive (-ing)	27-30 months	Baby crying.	1 st grade
Plural regular (-s)	27-30 months	I want cars.	Kindergarten
Possessive ('s)	31-34 months	Sam's ball.	1 st grade
Past regular (-ed)	35-40 months	She walked home.	Kindergarten-1st
Third person regular (-s)	35-40 months	Malcolm plays.	1 st grade
Past participle (-en) (uncontractible and contractible aux. verbs)	41-46 months	She has spoken. It is written.	2 nd grade (irregular past tense)

Inflectional Morpheme	Grade Level Standard
Comparative (-er) and Superlative (-est)	3 rd grade

Derivational Morphology

Derivational Morphemes - Prefix, suffix, or both applied to a root

Meyerson (1978) found that children as young as 8 years could apply suffix addition rules to aid in the oral generation and recall of nonsense words containing complex morphemes.


SSD & Inflectional Morphology

Inflectional Morphology
Link to SSD

<https://drive.google.com/file/d/1HvYh-Bw-JcUThVCCiCuBp1RvYn7CzrXseest/view>

Common Everyday Objects

Example: /k/ /g/ and /s/ and /z/




Right now
The dinosaur cooks the vegetables.
What is the dinosaur doing?
The dinosaur is cooking the vegetables.
What did the dinosaur do yesterday?
The dinosaur cooked the vegetables.
Whose vegetables are they?
They are the dinosaur's.

Cluster Reduction or /N/ Blends	/R/
skinny	angry
sleep	bitter
slim	brave
slow	brief
small	bright
smart	broad
smelly	dirty
smooth	dry

-er -est

-est -er



Inflectional

- present participle -ing
- plural -s and -es
- possessive -s
- third person singular -s
- past tense -ed
- past participle -en
- comparative/superlative -er, -est

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Describe the picture using inflectional endings and early developing morphology (also SSD)



Possible Targets

Today: She is splashing in the puddle. (She is splashing in the puddle, and he is watching the bird. The raindrops are falling. They are wearing raincoats. Mom may be unhappy because they are wet. She would have gone outside, but it was raining.)
Today: She splashes in the puddle, and he watches the bird.
Yesterday: She splashed in the puddle. The flowers bloomed, and the boy smiled.
Tomorrow: She will be splashing in the puddle. They will be returning home after they play.
Possessive: It is the girl's umbrella.
-er and -est: The mommy bird is bigger than the baby birds.
 (Discuss plants). The grass is bigger than the flowers. The tree is the biggest plant in the picture.
-en: One baby bird is hidden.
 It was a playful day dodging raindrops, playing in outside, and wearing our raincoats!



/n/ and /z/		Phonological process stopping
birds	skips	(see /n/ and /z/ list)
grass	skipped	four leaves (how many did i color)
boots	sleeping	five
coats	sleeps	flowers
rabbits	sleepier	the bird's worm
girl's	sleepiest	the bird's next
sing	slips	the boy's boots
singing	slipping	the girl's coats
sways	slips	this flower
swaying	slide	them
leaves	sliding	then
trees		those
glasses		thick
flies		thin
flying		hot
nest		hotter
splashes		hottest
splashing		the girl's chin (cheek, chapped)
flowers		jump
		jumps
		jumping

Derivational Morphology

Most Common 1st

Most Common Prefixes	Definition
re	again
un	not
dis	not, opposite of
in, im, il, ir	not
de	down, away
ante	before
anti	against
co	with

Example: /t/

Re: redo, remake, remember, restart, repeat, reuse, revise, refresh, return, revenge, recycle

Un: unclear, unfriendly, untruth, unoriginal, unwrap, unwrapping, unwrapped

Dis: disregard, distract, disrupt, disorder, disappear

Most Common Suffixes	Definition
-er	one who does
-ful	full of
-ly	characteristic of
-y	characterized by
-less	without
-ish	having the quality of
-ment	condition of
-ness	state of being

Examples: /t/

-er: player, teacher, driver, skier, cleaner, worker, firefighter, police officer

-ful: careful, fearful, tearful, harmful, hurtful, restful, cheerful

-ment: arrangement, improvement, advertisement, replacement, encouragement, treatment

Word Detective

pre	vent	able
con	cern	ing
de	test	ly

Goals and Objective

For Speech Sound Disorders

Write goals and objectives as one would for articulation goals with adding specific progression. The activities above would be the activities used to achieve these goals.

Example Goal

At the end of the second semester, student will perceive and use of initial /r/ and vocalic /r/ in words in structured activities in 8 out of 10 opportunities with minimal cueing as demonstrated through correct production.

Reflection

Reflection

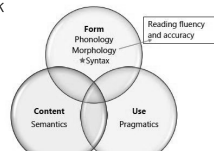
How would you systematically target morphology to support SSD, phonology, syntax, and semantics?

Morphology Conclusion

By using morphology strategies to target speech sounds, the student will gain both morphology skills and speech sound development at the same time.

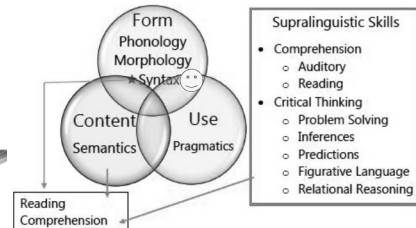
Review

About 60 % of the new words a reader will encounter are morphologically complex (Angelelli, Marinelli, & Burani, 2014). By linking speech sounds to inflectional and derivational morphology, we support phonological awareness skills, morphosyntax, and semantic sk



Auditory & Reading Comprehension

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(Morpho)Syntax

Verb voice and clause structures

Goals for SSD

Write goals for generalization whatever speech sounds or phonological process being targeted. In the activities used, make a conscientious effort to increase morphosyntax through the aforementioned strategies.

Vocabulary

Link to SSD

Be conscientious when choosing the word list for targeting SSD. Choose words that will increase vocabulary at the same time as remediation of the SSD.

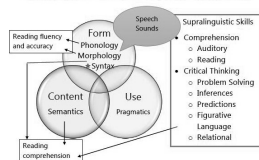
Goals for SSD

Write goals for word level, phrase level, sentence level, etc. to increase generalization whatever speech sounds or phonological process being targeted. In the activities used, make a conscientious effort to increase Tier I, Tier II, and Tier III vocabulary through the aforementioned strategies.

Let's Revisit

What will you do to target speech sounds and phonological processes through the domains of language to support literacy development?

Speech Sounds & 5 Domains of Language • Supralinguistic Skills



Takeaways

- ✗ The ability to accurately perceive speech sounds enhances speech sound development and literacy skills
- ✗ Students with SSD are more likely to demonstrate difficulty with morphological and phonological awareness skills, thus, reading and spelling.
- ✗ Preschool children with deficits in speech and morphology demonstrated better morphosyntax competency when morphology was targeted before speech
- ✗ By targeting speech sounds through phonology and morphology activities, improvement in speech and literacy can be achieved.

SSD and Literacy

From Cover to Cover: SLPs Play a Vital Role in Literacy Development when Pairing Speech Sound Disorders with the Domains of Language

