

# Assessment and Goal-Setting for Children with Remedial Speech Problems

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With thanks to my friend and mentor, Dr. Daniel Ling.



Dedicated to continuing the work of  
Dr. Daniel Ling.

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# **Objectives: Participants will be able to**

- describe the Ling Speech Model for assessing speech skills in children with hearing loss.
- identify at least three speech assessment tools appropriate for children with hearing loss and remedial speech issues.
- describe how to compare phonetic and phonologic level speech assessments to select appropriate goals for remediation.

# Who? Children who are D/HH and are otherwise typically developing.

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- Children who are identified **early** and receive optimum audiological management and early intervention in listening and spoken language.
- Children who are identified **late** and receive optimum audiological management and intervention in LSL.
- Children who are identified early, but do **not** receive optimum audiological management/intervention in LSL – thus are similar to late-identified children in some respects.
- Children who are identified **late** and have **not** received optimum audiological management or intervention in LSL.

# Who? Children who are D/HH and are NOT typically developing.

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- Children who are identified **early** and receive optimum audiological management and early intervention in listening and spoken language.
- Children who are identified **late** and receive optimum audiological management and intervention in LSL.
- Children who are identified early, but do **not** receive optimum audiological management/intervention in LSLS – thus are similar to late-identified children in some respects.
- Children who are identified **late** and have **not** received optimum audiological management or intervention in LSL.

# Who may have remedial speech problems? Most often...

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- Children who are late-identified (or who function as late-identified).
- Children who are **NOT** developing typically – have additional challenges.

Adaptations of assessment and intervention will depend on individual capabilities and needs of the child.



# Who was Dr. Daniel Ling?

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- One of the pioneers of listening and spoken language for children with hearing loss – Auditory-Verbal practice.
- Audiologist and internationally recognized authority on teaching speech to children who are deaf/hard of hearing.
- Used knowledge of speech acoustics & perception (what the child hears) to drive his model for teaching speech production (what the child says).
- Trained with the Ewings in England and emigrated to Canada. (Montreal Oral School for the Deaf. McGill University.)
- 1976, 2002. *Speech and the Hearing-Impaired Child: Theory and Practice*
- 1989. *Foundations of Spoken Language*





# The Ling Speech Model

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- Theoretical framework
- Order for assessment and teaching
- Specific speech teaching strategies
- Strategies related to speech acoustics
- Emphasis on listening as the primary modality for learning spoken language

**GOAL: Oral Communication**

# The Ling System & Current Best Practices

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- Early Identification and Intervention - child must be well aided as early as possible - from the first few weeks/ months of life
  - ~ Developmental Approach
  - ~ Parent Guidance

(Remedial hierarchy of learning speech for older children)

# The Ling System & Current Best Practices

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## Foundation: Hearing and Audiology

- ❖ Maximize Audition
- ❖ Emphasis on auditory strategies - visual and tactile used later if needed - then put back into hearing

# The Ling Thing

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## 35 years of Ling

- Addressed the link between Speech Perception and Speech Production
- Children SPEAK the way they HEAR
- Evaluate both what they can HEAR and what they can SAY

# Assessment...

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Problem solving - Is it a problem of:

## **INPUT:**

- \*SPEECH PERCEPTION

- \*SPEECH & SPOKEN LANGUAGE PROCESSING

## **OUTPUT:**

- \*SPEECH PRODUCTION

- \*LANGUAGE (morphology, syntax, semantics, pragmatics)



# The Ling Assessments

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## Criterion Referenced Evaluations

- Six Sound Test
- Phonetic Level Evaluation
- Phonologic Level Evaluation

Intervention is based on the results of careful analysis of evaluations.



# 'Rounding out' the Assessment

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- **Speech Perception: Six Sound Test** (speech production mirrors speech perception)
- **Oral Motor Screening** (if needed)
- **Phonetic Inventory: Phonetic Level Evaluation**
- **Word Test** (e.g., PAT, Goldman-Fristoe 2, IEPN)
- **Spoken Language Sample (Phonology & Language):** Phonologic Level Evaluation or PC-PEP; Stone, CASLLS, Language Analysis



# Ling Six Sound Test

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What SPEECH SOUNDS can the child detect?

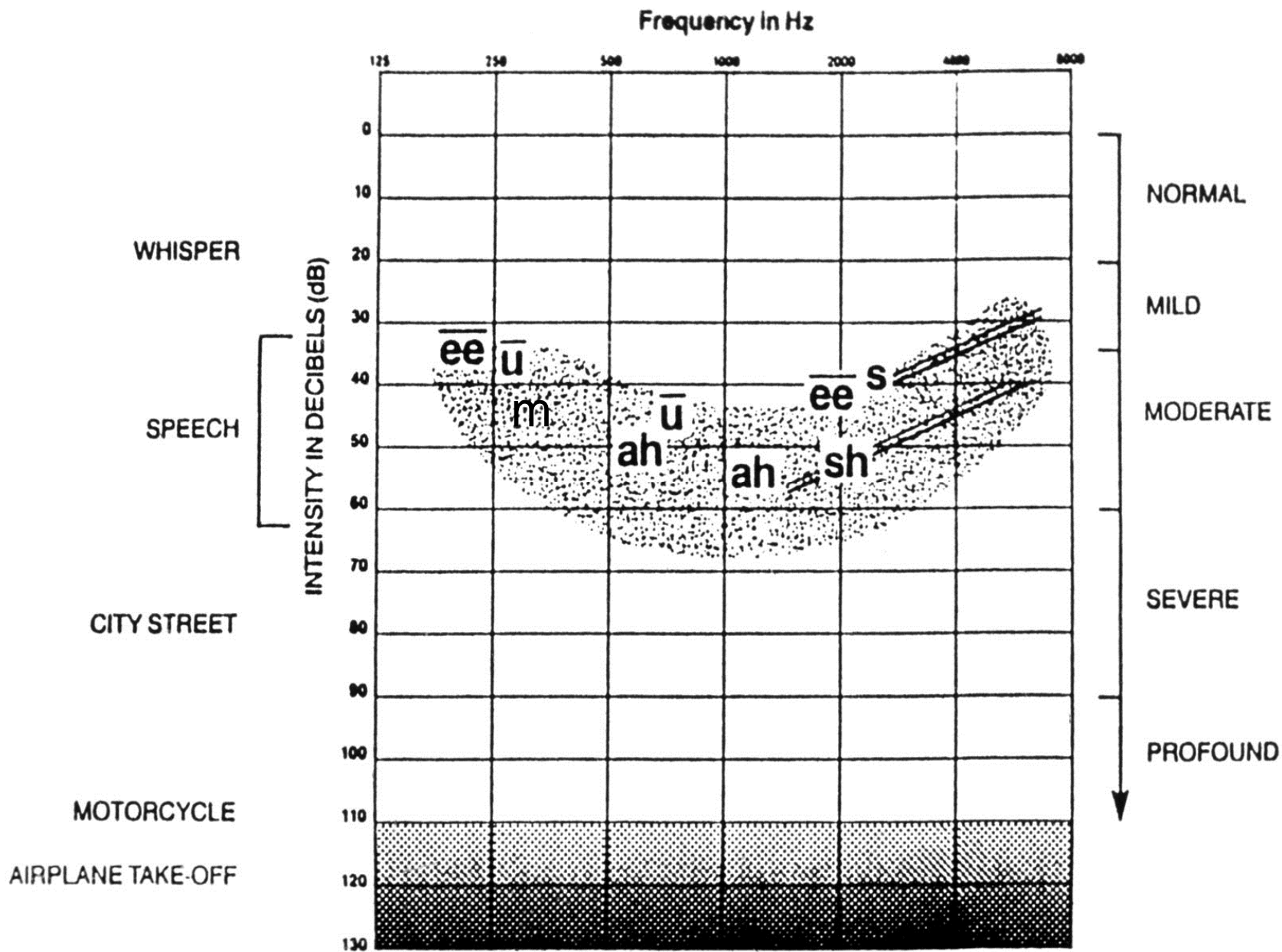
Determine access to sounds across the speech spectrum (Speech Banana)

m, oo, ah, ee, sh, s, (aw - Australia)

Add – nothing & “surprise” sounds

Look at aided thresholds

Evaluate effectiveness of hearing technology

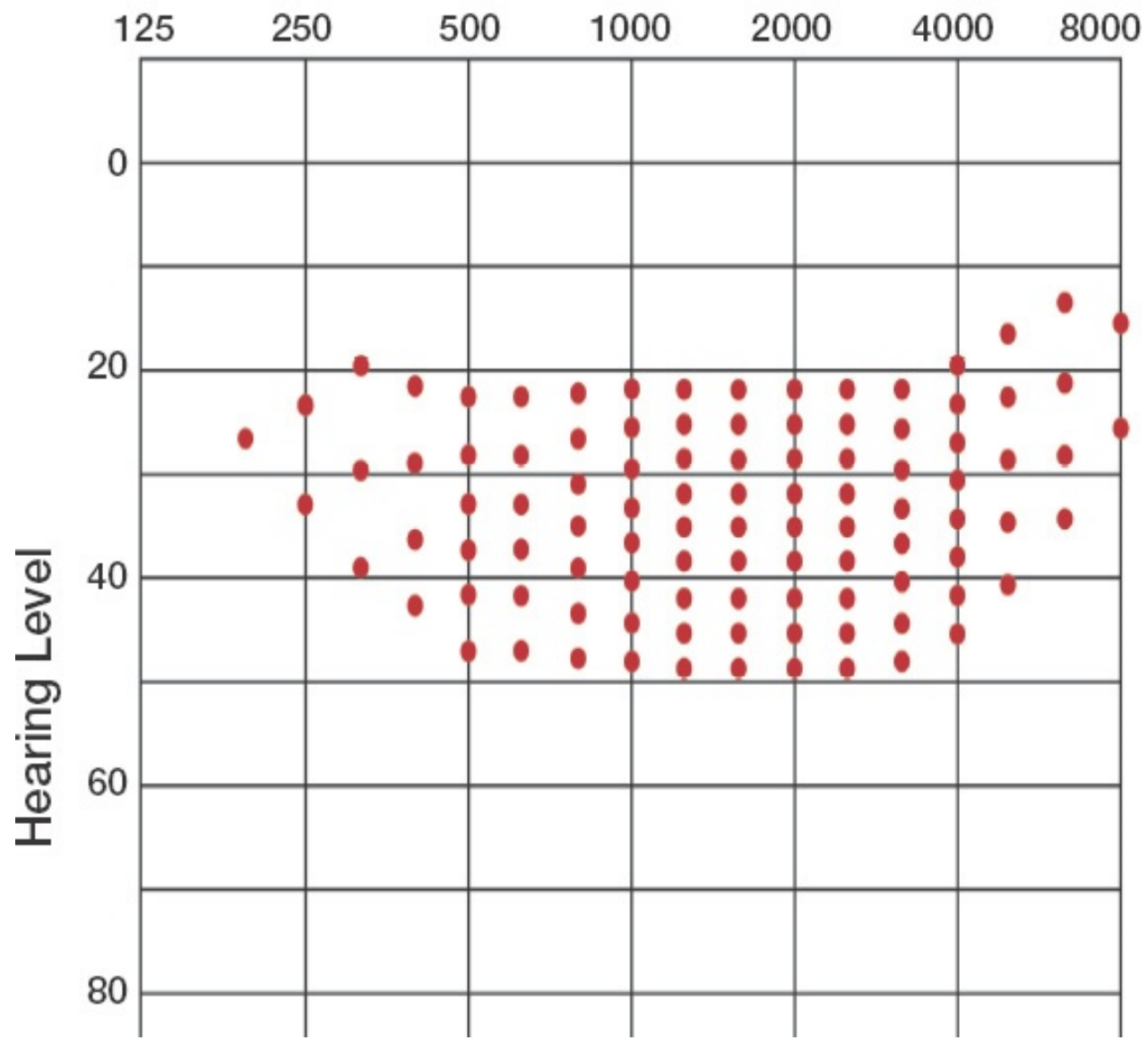


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# The SII-Based Method for Estimating the Articulation Index

## SII Count-the-Dots Audiogram Form

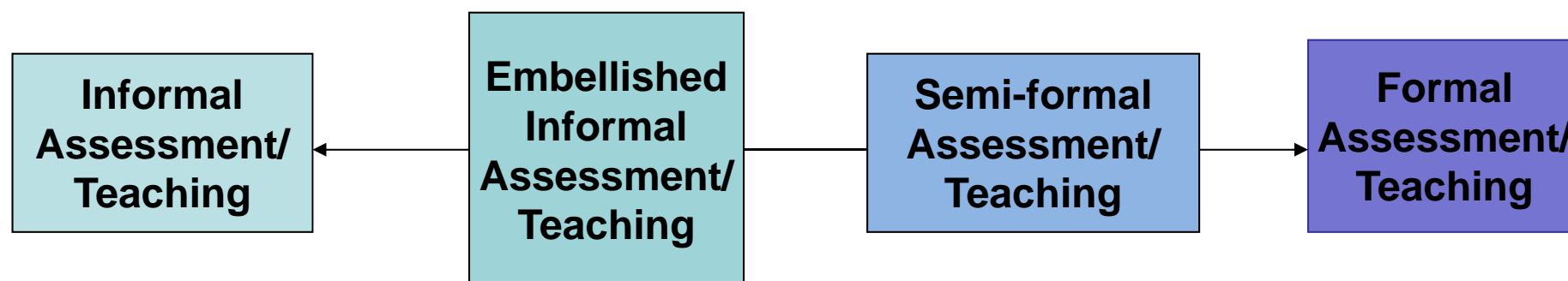


**Ling Six Sound Test: Detection or Identification over Distance - vary order and timing**

Ling Sound	1 m	2 m	3 m	4 m	5 m	_ m
/u/ oo						
/a/ ah						
/i/ ee						
/S/ sh						
/s/ ss						
/m/ mm						
aw						
nothing						
“surprise”						

# Implications for Implementation

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The older the child and the less well the child uses his/her hearing, the more formal your assessment and teaching will need to be.

# Two Levels of Speech Assessment and Development

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## *Phonetic Level*

*(non-meaningful:  
syllables)*

Gain mastery over the  
basic mechanics

of talking

- ~ speech reception
- ~ speech production
- ~ feedback skills

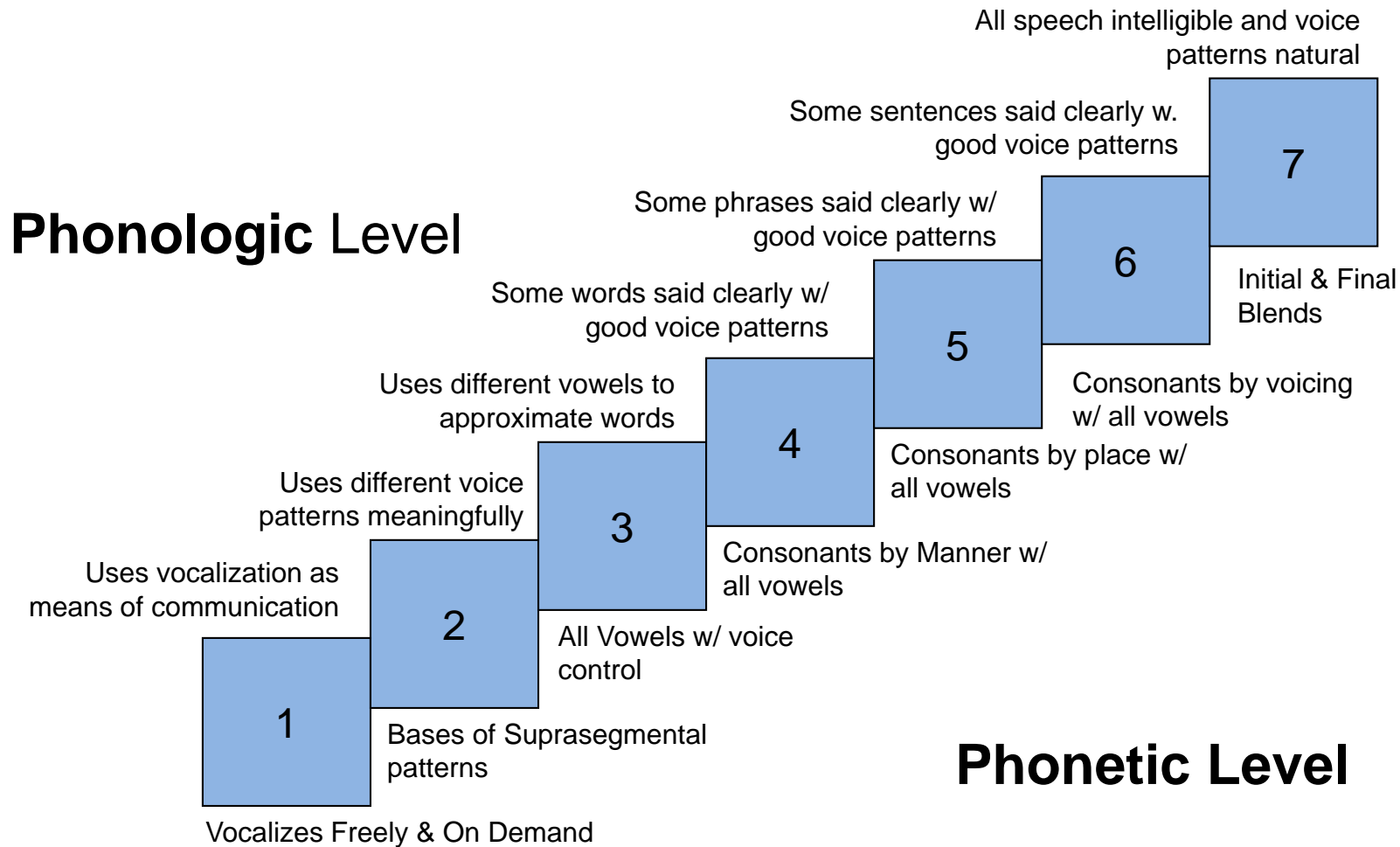
## *Phonologic Level*

*(meaningful: words,  
phrases, sentences,  
discourse)*

Using speech patterns  
meaningfully in ways  
that convey thoughts  
and feelings



# Ling 7 Stage Model of Speech



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# Phonetic Level Evaluation

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## Purposes:

- To determine what neuromuscular coordination the child has relative to motor speech skill.
- To select targets for speech teaching.

# Phonetic Level Evaluation

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Sounds are assessed by imitation of:

- Single Syllables
- Repeated Syllables
- Alternated Syllables

(note: start with repeated syllables to save time)

# Phonetic Level Evaluation

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- Check : correct
- Plus + : inconsistent
- Minus - : incorrect/missing

Make note of any substitutions or distortions.

# Phonetic Level Evaluation

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- Suprasegmentals
  - Duration, Intensity & Pitch
- Segmentals
  - Vowels & Diphthongs
  - Consonants & Consonant Blends



# Ling System - Assessment and Development of Speech Sounds

**Vocalization:** spontaneous / on demand

**Suprasegmental Patterns:**

**Duration, Intensity, Pitch**

**Vowels and Diphthongs**

**Step 1**

/a/ hot

/i/ bee

/u/ two

/au/ cow

/ai/ pie

**Step 2**

“aw” saw

“oi” boy

/E/ bed

/U/ book

/I/ pig

**Step 3**

/ae/ hat

“uh” cup

/o/ boat

/a/ dog

/ei/ cake

**Step 4**

r-colored vowels

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# Ling System - Assessment and Development of Speech Sounds

## Consonants

Step 1	Step 2	Step 3	Step 4
b/p	d/t	g/k	voicing
stop b/p	stop d/t	stop k/g	b - p
w (wh)	/j/ (y)		d - t
h	l	r	g - k
f/v	s/z	ch/dg	f - v, th - th
th/th	sh/zh		s - z, sh - zh
*m	*n	*ng	ch - dg

Initial Consonant Blends

Final Consonant Blends

> developed  
concurrently

# Phonetic Level Evaluation

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## Results:

- Stop the test after 6 errors / end of a section (go to the end of at least Step 1 consonants)
- Should not only have suprasegmentals and vowels - need some consonants
- Make note of any modifications - child may have skills at the next level - especially true for children with cochlear implants



# Selecting Phonetic Level Targets:

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- Select 6 Targets for the child
- Select the first items “failed” as the first items to be taught – Move from the easiest to the more difficult – Select inconsistent targets (+).
- Think about how targets are related in terms of perception and production (e.g. High frequency? Manner of production? Place of production?)

Consonants and blends are always combined with vowels for practice.

**Use speech babble for an informal PLE with younger children.**

# Setting Speech Goals: Speech Target Summary

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## Phonetic Level

Syllables

## Phonologic Level

Words Phrases Sentences

Suprasegmentals

Vowels &  
Diphthongs

Step 1 Consonants

Step 2 Consonants

Step 3 Consonants

Step 4 Consonants

Initial Blends

Final Blends

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# Phonologic Level: Word Tests

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- Photo Articulation Test (PAT)
- Goldman-Fristoe 2 Test of Articulation
- CID Picture SPINE (D/HH)
- Identifying Early Phonological Needs  
(good for younger children or children with a limited vocabulary – only 25 words)



# CID Picture SPINE

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## SPeech INTelligibility Evaluation

Materials include:

Manual; Response Forms; 300 Picture Cards  
(in a box – 4 “Decks” 25 practice/50 test cards per deck)

Child says the word and  
the adult writes what he/she hears.

(Monsen, Moog, & Geers, 1988)

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# Setting Speech Goals: Speech Target Summary

---

Phonetic Level

Phonologic Level

Syllables

Words Phrases Sentences

Suprasegmentals

Vowels &  
Diphthongs

Step 1 Consonants

Step 2 Consonants

Step 3 Consonants

Step 4 Consonants

Initial Blends

Final Blends

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# Phonologic Level Evaluation

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- COLLECT LANGUAGE SAMPLE
- ANALYZE:
  1. Spontaneous Speech Production (phonology)
  2. Spoken Language (pragmatics, semantics, syntax)

# Language Sampling: 5 areas of discourse

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- Conversation
- Narration
- Description
- Explanation/  
Directions
- Question Formation



# Analyzing the Spontaneous Spoken Language Sample

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- Orthographic transcription
- Phonetic transcription and phonologic level speech analysis
- Compare Phonologic Level Evaluation to Phonetic Level Evaluation

What phonetic level speech skills are being used in spontaneous spoken language?



# Setting Speech Goals: Speech Target Summary

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## Phonetic Level

Syllables

Suprasegmentals

Vowels &  
Diphthongs

Step 1 Consonants

Step 2 Consonants

Step 3 Consonants

Step 4 Consonants

Initial Blends

Final Blends

## Phonologic Level

Words Phrases Sentences

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# Analyzing the Language Sample

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- A language analysis of the Spontaneous Spoken Language Sample may also be conducted
  - Conversational Competence (Stone)
  - Analysis of semantics, pragmatics, syntax, morphology
  - Plot on CASLLS
- Compare to other language assessments

# Analyzing the Language Sample

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Which language forms are being used in spoken language and which need further development?

Which phonologic level speech targets are a good “fit” with the child’s language targets?



# Putting it all together: Linking Speech & Language Goals

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Example:

- Speech goal: /n/
- Language goal: prepositions  
–in, on, under

# Assessment...Return to your initial questions...

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Is it a problem of:

## **INPUT:**

\*SPEECH PERCEPTION

\*SPEECH & SPOKEN LANGUAGE PROCESSING

## **OUTPUT:**

\*SPEECH PRODUCTION

\*LANGUAGE (morphology, syntax, semantics, pragmatics)



# Thank you!

## Hope to see you at one of these events....

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### **MELBOURNE**

- When: **Thursday 21 and Friday 22 November 2013**
- Location: Victorian Deaf Education Institute, St Kilda Road Melbourne

### **PERTH**

- When: **Monday 25 and Tuesday 26 November 2013**
- Location: Western Australian Foundation for Deaf Children, 55 Curtin Avenue Cottesloe

### **SYDNEY**

- When: **Monday 2 and Tuesday 3 December 2013**
- Location: RIDBC Renwick Centre

### **BRISBANE**

- When: **Thursday 5 and Friday 6 December 2013**
- Location: \* Hotel George Williams, 317-325 George Street Brisbane
- \* [PLEASE NOTE NEW VENUE](#)

### **NEW ZEALAND: Christchurch**

- When: **Monday 9 and Tuesday 10 December 2013**
- Location: Van Asch Deaf Education Institute, Corner of Truro and Van Asch streets, Sumner, Christchurch

# Questions

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Perigoe, C. (1999). Facilitating early speech development, *Australian Journal of Educators of the Deaf (AJED)*, 5, 43-48.

Perigoe, C. (1992). Strategies for the remediation of speech of hearing-impaired children. *The Volta Review*, 94, 95-118.

Perigoe, C. & Ling, D. (1986). Generalization of speech skills in hearing-impaired children. *The Volta Review*, 88, 351-366.

# Helpful websites

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Alexander Graham Bell Association  
[www.agbell.org](http://www.agbell.org)

Audiology Online [www.audiologyonline.com](http://www.audiologyonline.com)

Cochlear website [www.cochlear.com/HOPE](http://www.cochlear.com/HOPE)

Oral Deaf Education [www.oraldeafed.org](http://www.oraldeafed.org)

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