An Innovative Educational Approach to Addressing Articulation Differences
(Offering short-term, intensive general education services to children with single sound errors in San Diego City Schools)

The following information was presented in a poster session during the ASHA Schools Conference in Phoenix, AZ in July 2006 by Jennifer Taps, M.A., CCC-SLP. It is provided here with permission from this author. Please direct questions to Jennifer at jtaps@sandi.net.

Why Reform?

The Reform
- To shift services to students with single sound articulation errors from special education to general education
- To offer single sound students intensive, short-term, high quality services within general education
- To provide intensive professional development and support to district SLPs

2004 Survey of 178 SDCS SLPs
- 821 IEPs for single sound differences only
- 14 full-time SLPs
- Average length of treatment: 3 years
- Average amount of service: 30 minutes per week
- Most SLPs used traditional approach

Critical Features of Reform
- Buy-in from administration, staff and community
- Proposal: Benefits and Phase-in Implementation Plan
- Meetings and workshops with stakeholders
- Adherence to Special Education eligibility requirements
- Speech Improvement Class at every site
- Articulation Resource Center and Articulation Differences and Disorders Manual

Research of Social Ramifications, Crowe-Hall (1991)
- Videos of children with mild speech disorders and typical speech
- Interviewed 4th and 6th graders about their perceptions of these peer groups
- Kids with mild speech errors viewed more negatively than peers with typical speech
- Encouraged school districts to intervene because of possible social/emotional impact

Getting Started

Speech Improvement (SI) Class at Every Site
- Gradual implementation during the first year
Overview of Service Delivery Approaches
Assessment Procedures
Screening, Full Assessment, IEP, 504
Protocols, Checklists, Rating Scales
Sample Reports
Speech Improvement Class
Description, Permission and Record Forms, Inventories
Intervention Approaches
Traditional, Complexity & Motor Learning

Adhere to Eligibility Requirements

• In SDSCS, students must meet three criteria to qualify for IEP services:
  → Significantly interferes with communication AND
  → Attracts adverse attention AND
  → Adversely affects educational performance

Speech Improvement or IEP?

• If the SLP suspects a disability that is impeding educational progress, then refer, assess, and develop an IEP, if appropriate
• No compelling evidence in the research that single sound articulation disorders impact educational performance
• If the SLP thinks there is a difference or RTI is more appropriate, then offer Speech Improvement Class

Other Considerations

• Determine if difference is developmental or dialectical
• Lateral /s/ production not developmental (intervene at any time)
• After the speech normalization boundary of 8.5 years, it’s much harder to remediate a sound (Shriberg, Kwiatkowski & Gruber, JSLHR, 37, October 1994 – “Findings are interpreted to support the hypothesis of a critical period for speech-sound development, with long-term normalization of significant speech delay reaching a chronological age boundary at approximately 8.5 years.”)
• Research suggests that children who are stimulable for target sounds will acquire them without intervention

Ideal Candidates for the Speech Improvement Class

• 1st, 2nd, or 3rd grade (preferably around age 7 which leaves 1.5 years before the speech normalization boundary)
• Working on single sound or cognates or perhaps two sounds
• Does not meet three special education criteria for articulation
• Nonstimulable for target sounds (monitor students who are stimulable, treatment probably not warranted)
• Student is motivated, will attend 60 minutes per week, and will practice (home practice is required)

Best Practices

• Intensive services (60 minutes per week and homework) yield better generalization
• Mass practice is essential (at least 150 productions per session)
• Self-monitoring is essential to progress
• Research does not support oral motor activities for sound production
• ASHA NOMS (National Outcome Measurement System) Project
  → Suggests that it takes 17-20 hours to remediate a single sound
  → Recommends intensive services; two 30 minute sessions ideal
  → Home practice critical for generalization of skills

Routes to Speech Improvement Class

Student has IEP (from any district)

1. IEP → Dismiss from IEP → Enroll in SI Class
   a. Ask teacher to complete Describing Speech Misarticulations prior to meeting (pp 29 from manual)
   b. Review progress at the annual IEP meeting
   c. If the student does not meet criteria, consider dismissal
   d. Follow dismissal procedures (assess with performance-based tools from manual)
   e. Students may enroll in SI Class; Parents sign Permission to Enroll (pp 47 from manual)

2. IEP → Keep on IEP (Rarely)
   a. If a student currently receives 30 minutes per week, consider adding another 30 minutes to accelerate intervention
   b. SLPS can do this in two ways:
      → Convene an IEP and add 30 minutes for 60 minutes total, or
      → Add 30 minutes as a general education service (30 minutes on IEP, 30 minutes SI Class)
   c. Parents sign Permission to Enroll

New Student

3. Enroll in SI Class
   a. Teacher completes Describing Speech Misarticulations
   b. If three criteria are not met and student is a good candidate for SI class, enroll in class.
      Require home practice completion.
   c. Ask parents to sign Permission to Enroll
Class Procedures

Procedures Before Enrollment

- Provide principal and staff with information about the Speech Improvement Class option (email Jennifer Taps for Powerpoint presentation)
- Teachers identify students and complete Describing Speech Misarticulations
- Determine whether or not student is a candidate (can also monitor students who are young or who are stimulable for target sound(s)
- Send home Permission to Enroll and Homework Contract
- After parents sign and return, work with teacher to schedule class time
- Administer Speech Improvement Sound Inventory prior to SI Class for baseline
- Schedule two 30-minute sessions (if possible) for 20 weeks of intensive therapy
- Provide daily home practice opportunities
- Periodically check on progress and communicate with parents and teacher
- Document attendance (on back of Speech Improvement Sound Inventory)

Home Practice

- General education
- Can require homework
- Otherwise, SLP can go to next student on the waiting list

Procedures for Completion

- Document attendance
- Document homework completion
- Readminister Speech Improvement Sound Inventory to compare with baseline
- Award Certificate of Completion
- Reenroll if more practice is needed (at the discretion of SLP)

Motor Learning Treatment Strategies (Phonetic)

Motor Learning Skill Acquisition – Three Phases (Skelton, 2004)

1. Pre-practice
   a. Brief placement/production phase (OK to return to this phase at any time)
   b. Teach target sound in isolation and syllables until 80% accurate
   c. May need to teach new strategies or make phonetic adjustments in how student produces the sound(s)

2. Practice
   a. Randomized variable sequence of tasks
   b. Schema theory predicts greater transfer and retention because “rules” are flexible
   c. Student practices at different levels (i.e. words, phrases, sentences, conversation) or different numbers during each session (more than one context; not “fixed” at a particular level as in traditional treatment)
3. Generalization
   a. Practice skills in more representative contexts of communication
   b. Provides natural consequences of performance, including listener’s reaction

Important Note About Pre-Practice/Placement Strategies

- Many new SLPs are not trained in this area; critical to provide resources for this skill
- Dr. Bleile’s new book: *Late Eight* (Plural Publishing)
- Dr. Secord’s revised book: *Eliciting Sounds* (2nd edition available January 2007)

Randomization Principle

- “Blocked practice (all practice items of target stimulus practiced together before moving on) leads to better performance in given sessions, but randomized practice results in better retention/motor learning.” (Skelton, 2004)

Randomization Can Be Accomplished By:

- Switching levels of complexity (sounds, words, phrases, sentences, conversation)
- Switching the order of target words
- Switching the number of repetitions
- Changing body position – standing, sitting, etc.
- Self-monitoring while doing a million other things (as kids do)
- Changing stress, prosody, intonation, emotional context, rate of speech

Feedback

- Offer delayed feedback by waiting 5 seconds (differs from traditional artic therapy)
- Provide more feedback during the pre-practice phase that for the practice phase
- Provides opportunity for student to assemble/retrieve motor plans (Yorkston et al, 1999)
- In cognitive research, adults benefited from specific feedback, but children decreased performance
- Offers student more opportunities for self-monitoring

Complexity Theory Principles (Phonemic)

Complexity Principles

- Guided by language laws and sound features
- Treatment targets sounds that are non-stimulable, phonetically-complex, and later-developing
- Results in generalization to untreated sounds and contexts

Language Laws

- Universals – implicational relationships found across languages
- Laws can be used to guide treatment
- Treating marked structures creates change in unmarked structures
Relevant Laws for SI Students

- Fricatives in initial position → fricatives in final position (Smith, 1973)
- Clusters → Singletons (Gallagher & Shriner, 1975)
- Three-element clusters → two-element /s/ and non-/s/ clusters (Gierut & Champion, 2001)

Maximal Pairs or Minimal Pairs

- Used to show contrast in meaning of sound differences
- Cycles approach – target sound and substitution in contrast (“wink” vs “rink”)
- Complexity – target sound and sound with maximal feature differences (“sink” vs “rink”)

Real Words

- Current research (Gierut & Morrisette, 2005 and Storkel & Morrisette, 2002) suggests that the following kinds of words yield the most generalization in the system:
  - High frequency words (common, real) have greater impact than treating low-frequency words
  - Low density words (few rhyming counterparts) have greater impact than high density words (many rhyming counterparts)

Sample High Frequency Words (Storkel, 2004)

- Low-density /r/ words: radio, river
- High-density /r/ words: run, read

Nonsense Words

- Frequently utilized because these words are novel and therefore not “frozen” in a student’s system
- May break into old pattern
- Treatment strategy since 1930s
- Use caution when applying this strategy with students who also have language disorders

Ways to Elicit Mass Practice (150 items per session)

Activities

- Taking own data on chart (creates ownership)
- Use tally counters to challenge students to produce 150 items or more (Go to www.tallycounterstore.com)
- Have students subvocalize (say it with their “voices turned off”) during other students’ turns to increase the motor practice and number of repetitions (may have to monitor initially)
- Have students track their totals using the practice charts and/or the counters
- Add up the group total to use in contest across groups to see who produces the most
- Manipulatives can be used for random activities
Centers

- Create “centers” like in a general education classroom; Students do something different every minute or so while practicing
- Four stations might include the following:
  -> one student at the board saying words
  -> one student putting a puzzle together saying single words
  -> one student lying on the floor practicing sentences
  -> one student typing on the computer practicing phrases
- Encourages students to use good sounds in a variety of contexts
- Say “switch” at random times for them to move to a new station
- Provide a written (visual) sequence to follow (e.g. board → table → computer → floor → board)

Benefits

To the Student

- Access to high quality services
- Accurate diagnosis and identification
- Shorter treatment time
- Increased practice in classroom and at home

To the SLP

- More technical support through Articulation Resource Center
- Increased ability to manage workload (5 SI students count toward caseload total)
- More latitude in deciding who needs help and when
- Flexible scheduling
- Waiting list
- Less paperwork
- Introduces RTI to participating sites