COGNITIVE INTERVENTION FOR DEAF LEARNERS

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OVERVIEW

HISTORICAL BACKGROUND

A SYSTEMATIC INTERVENTION

PROGRAM COMPONENTS

EMPIRICAL RESULTS

IMPLEMENTATION
Ancient Hebrews’ admonishment not to curse deaf persons

Aristotle—the ear is the organ of instruction; therefore, deaf persons cannot learn

17th Century Europe—some deaf persons were able to be taught to speak; therefore, not all deaf persons have inferior intelligence (the “right” conclusion for the wrong reason)
1924-25—USA National Research Council says deaf learners 2-3 years “retarded”

1953—Myklebust says deaf can only be concrete thinkers

1961—Rosenstein found no differences between deaf and hearing potential for thinking
1964—Furth says problem is not with deaf learners, but with the tests being used

1967—Vernon’s meta-analysis shows deaf and hearing with the same range of cognitive potential

1986—Martin and Jonas found cognitive improvement from pro-active intervention program
2003—Marschark says many cognitive tests for deaf learners still lack validity and appropriateness; discusses memory and retrieval capacities

2009—Martin says careful attention to appropriate interpretation of tests is vital

2009—Marschark reminds that deaf and hearing learners process information differently, and that deaf learners are not same as hearing learners who can’t hear
See:
Attention episodes (Meadow-Orlans and Spencer, 1996)
Cognitive Profiles of Deaf Learners (Marschark, 2014)
Development of Visual Attention (Spencer, 2000)
Memory systems for information storage (Boutla, Supalla, Newport, and Bavelier, 2004)
Short-term Memory Encoding (Miller, 2007)
Visuo-Spatial Memory (Marschark and Mayer, 1998)
Cognitive Potential for learners who are deaf has been established.

Problem-Solving skills are essential for success in the world.

Higher-level cognitive strategies also help in currently used assessments.

Higher-level cognitive processes underlie most subject-matter content.

Process is as important as Content.
Common Core Standards adopted by most states.

Standards contain considerable cognitive language, but do not give an EXPLICIT place for cognitive instruction in schools.
An Example of Intervention

Instrumental Enrichment—a systematic, in-depth, and intensive intervention, based on THEORY OF COGNITIVE MODIFIABILITY (Feuerstein, 1980).

Three Steps in each Cognitive Episode:

1. The use of Mediation—where the teacher comes between the task and the learner and helps to interpret and think, but requires the LEARNER to solve the task.
2. The use of **Metacognition**—pro-active thinking about thinking, to reflect on processes used, so as to become autonomous later as a problem-solver—a key executive function

3. The use of “**Bridging**”—making applications from content-free cognitive tasks to subject-matter and real-world contexts
Two Issues:

1. How can teachers make needed time for mediating the thought process when states are obsessed with required tests?

2. Do generic problem-solving strategies exist, or are strategies different for every subject area?
COGNITIVE FUNCTIONS

INPUT

- Collecting the data
- Making a plan
- Labeling experiences
- Describing when and where
- Deciding on characteristics
- Organizing
- Being precise
Cognitive Functions (cntd.)

ELABORATION
Defining the Problem
Staying relevant
Envisioning
Making a Plan
Keeping information in mind
Look for Relationships
Comparing
Categorizing
Cognitive Functions (concl.)

ELABORATION (cntd.)
Considering Possibilities
Using Logic to prove a point

OUTPUT
Expressing solution precisely
Think things through before expressing
Slow down
If a block, come back later and try again
PROGRAM COMPONENTS

2 Versions: 1. ages 3-8 and special needs;
2. ages 9-adult

Activities:
Finding Patterns
Orientation in Personal Space
Comparisons
Analytic Perception
Temporal Relationships
Categorization
Program Components (cntd.)

Understanding Absurdities
Progressions
Social Relationships
Creating and following verbal instructions
Verbal Logic
Symbolic Logic

(See Examples)
Results with Intervention Example

For deaf learners who have in-depth 2-3 times per week experiences with Instrumental Enrichment over 2 years by comparison with control group:

1. Significant improvement in Reading Comprehension
2. Significant improvement in Mathematics Concepts
3. Significant improvement in Mathematics Computation
4. Significant improvement in Reasoning (measured by Raven’s Standard Progressive Matrices)
5. Significant improvement in observed Thinking Habits (finding multiple solutions to problems, not giving up, etc.)
6. Significant improvement in developing solutions to a real-world problem.

Also observed were dispositional improvements in: motivation, self-confidence, staying on-task, reduced impulsivity, slowing down to plan before problem-solving, attention span, increased independence, empathy, and peer sharing in problem-solving situations.
Evidence is found in USA, U.K., and China through an international comparative study (see American Annals of the Deaf, October 2001, by Martin, Craft, and Zhang).


CLASSROOM IMPLEMENTATION

- A PROFESSIONAL COMMITMENT
- IN-DEPTH PROFESSIONAL DEVELOPMENT FOR TEACHERS
- TEACHERS “COGNIFY” THEIR CURRICULUM
- INFUSION WITHIN SUBJECT MATTER
Selecting a Cognitive Intervention Program for Classroom Commitment

CRITERIA:
1. Strong theoretical base
2. Clear evidence of prior research results
3. No promise of a “quick fix”
4. Teacher development is central
5. Comprehensive set of strategies are addressed (not one or two skills)
6. A record of successful implementations
Where to from here?

Setting the fundamental importance of cognitive instruction as a centerpiece in deaf (and other) education
Carrying out in-depth teacher development
Providing information to future teachers during their university preparation
Orienting teacher-education university faculty to the importance of cognitive education
Continuing research--executive functions and Theory of Mind; effects of cochlear implants
FOR MORE INFORMATION

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