The State of Evidence in Deafblindness: A Guide to Research Needs and Effective Practices

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+ Where did the evidence for this presentation come from?

- Analysis for the CEEDAR Center of articles published between 1967-2013 on 12 topics. Publications in English. CEEDAR = Collaboration for Effective Educator Development, Assessment, and Reform (Ferrell, Bruce, & Luckner, 2014).

- More in depth analysis of just communication and literacy addressed in articles appearing 1990-2015 (Bruce, Nelson, Perez, Stutzman, & Buchanan (2016).

- Addition of sub-topic of accommodations in assessment for Bruce, Luckner, & Ferrell, K. A. (2018).

Our Analysis Process for Sensory Disabilities Innovation Configuration

- NOTE: Calculated the level of evidence for each practice that EMERGED from analysis of the literature

  - Thus some important practices were not identified because there were no studies and a lack of professional literature.

  (Ferrell, Bruce, & Luckner, 2014)

12 Topic Areas Reviewed

- Administration

- Assessment

- Assistive Technology

- Early Identification/ Early Intervention

- Communication

- Literacy

- Social-Emotional

- Math

- Science

- Life Skills (includes Orientation & Mobility)

- Transition

- School Placement/Inclusion

Identifying the Level of Evidence

- See document: The CEEDAR Center Evidence Standards

- 4 levels of evidence:
  - Strong
  - Moderate
  - Limited
  - Emerging

Defining Evidence Levels

- Strong: 1+ strong causal design + 1+ moderately strong –or- 5 single subject design -or- 5+ correlational studies

- Moderate: 3+ moderately-strong causal designs -or- 3 single-subject designs (with 20+ participants and 2+ different research teams) -or- 3 correlational designs -or- 2+ meta-analyses or syntheses (with quality indicators for syntheses)

- Limited: At least 1 causal design study -or- 1 single-subject design study -or- 1 correlational study -or- 1 meta-analysis or synthesis (with quality indicators for syntheses)

- Emerging: Primarily relying on professional literature other than research studies
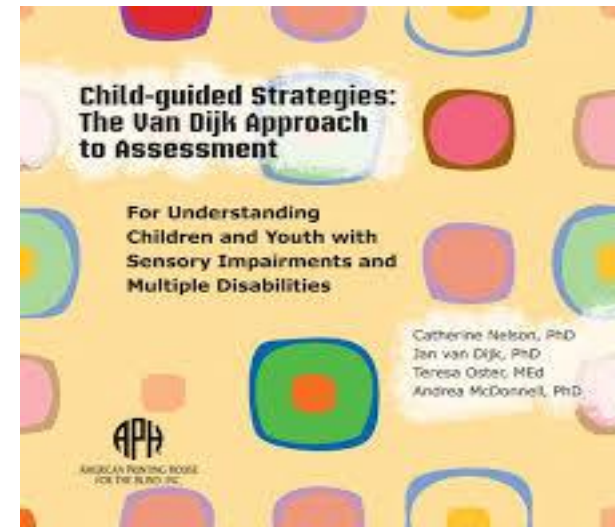
Findings: Administration of School Programs
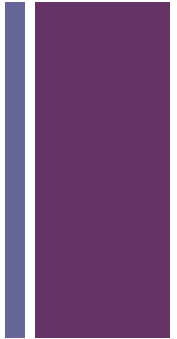
- Each educational team should include a professional with expertise in deafblindness. EMERGING
  - Knowledge of communication methods
  - Knowledge of instructional approaches (child-guided and systematic instruction)
  - Planning and implementation of individualized program

- Instructional groupings must be small enough to ensure access, engagement, and frequent feedback from instructor. EMERGING

Findings: Assessment

- Informal assessment instruments and procedures are essential to capturing the student's abilities and needs. The sole use of formal instruments is inappropriate. EMERGING
  - Dynamic Assessment, including child-guided
  - Curriculum-Based Assessment
  - Ecological Assessment & Task Analysis
  - Structured Informal Assessments

Child-guided Strategies: The Van Dijk Approach to Assessment

For Understanding Children and Youth with Sensory Impairments and Multiple Disabilities

Catherine Nelson, PhD
Jan van Dijk, PhD
Teresa Oster, MEd
Andrea McDonnell, PhD

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+ Assessment, cont.

- Assess the visual, auditory, and tactile characteristics of each environment the student engages in (or may engage in) to:
  - determine potential impact on student
  - support communication programming
  - plan appropriate adaptations and accommodations.
  EMERGING

Assistive Technology: Cochlear Implantation

- Students who are deafblind experience unique benefits, risks, and potential outcome predictors from cochlear implants. The team member with deafblind expertise should know this research. STRONG

- When reporting benefits (or lack of benefits) of cochlear implants, consider non-speech outcomes including improved awareness of environmental sounds or increased responsiveness. STRONG

Early Identification and Early Intervention, cont.

- Young students will benefit from caregiver preparation to:
  - recognize the child's cues for interactions
  - establish routines to elicit anticipation (think about coactive movement routines with pauses to elicit response; anticipation shelves/calendar systems
  - provide contingent responses.

  MODERATE

Reviewing Findings: Communication

- Communication development and social interactions should be emphasized every day in the context of natural environments. LIMITED

- Apply child-guided approaches to support communication development and different types of dialogues. LIMITED

- Apply systematic approaches to increase the rate and variety of communicative intents/functions expressed. MODERATE

- Improve adult communication partner skills through systematic demonstration and modeling. LIMITED in 2014, MODERATE as of 2018.

+ Communication, cont.

- Tangible representations/symbols are a critical form of communication for prelinguistic students who are deafblind. MODERATE

+ Findings: Literacy

- An expanded view of literacy (that goes beyond traditional reading and writing) is required to address the needs of students who are deafblind and prelinguistic. EMERGING
  - Daily schedules/anticipation shelves, integrated story boxes, experience stories, home/school journals, and choice-making as literacy lessons.

- Provide a literacy rich environment with hands on experiences to conceptually ground experiences. EMERGING

Key Concepts to Keep in Mind

- Importance of experience to ground literacy

- Saliency-selecting representation for what the Individual who is Deafblind experienced-what was most important?

- Individualization of literacy instruction

- Personalization of literacy instruction

Reviewing Findings: Social-Emotional

- Identify the purpose fulfilled by unacceptable behaviors. EMERGING
  - (Functional Behavioral Assessment-FBA)

- Knowledge of the child's etiology and the impact of deafblindness is critical to assessment and to planning individualized positive behavior support plans. MODERATE

- Apply behavioral principles to reduce or eliminate stereotypies, self-injurious behaviors, and aggression toward others. MODERATE

Reviewing Findings: Mathematics

- Use consistent wording for mathematical symbols and operations. EMERGING

- When preparing to teach each math lesson, consider:
  - student's experiential knowledge
  - vocabulary demands of lesson
  - need to modify content
  - need for manipulatives to support understanding
  - need for adaptations to improve access and participation. EMERGING

Mathematics, cont.

- Provide instruction on the use of specialized mathematics equipment and specialized approaches, such as the abacus or mental math. EMERGING
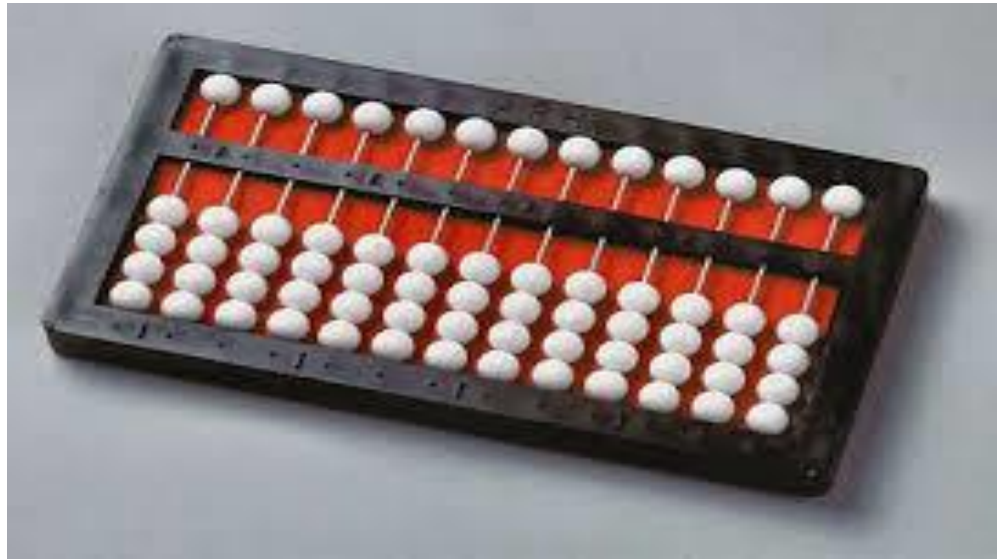
Reviewing Findings: Science

- When preparing to teach each lesson, consider:
  - student's experiential knowledge
  - vocabulary demands of the lesson
  - the need for modification of content
  - adaptations and accommodations
  - non-visual means of presentation.
- EMERGING

Reviewing Findings: Life Skills

- Improve daily living skills through systematic instruction that includes task analysis and the application of behavioral principles (such as graduated guidance). STRONG

Life Skills: Orientation & Mobility

- With the guidance of the Certified Orientation and Mobility Specialist (COMS), improve O & M skills through systematic instruction in the context of structured activities that are desirable and functional. LIMITED

- O & M instruction for students who are deafblind must be modified (from what is offered to students who are visually impaired) by considering
  - The impact of deafblindness
  - Potential balance issues
  - Unique communication needs
  - Length or number of sessions (due to communication when traveling). EMERGING

Reviewing Findings: Transition

- Vocational experiences during secondary education increase the likelihood of post-school employment. EMERGING (Other fields of disability have demonstrated higher evidence)

- An interagency approach to Personal Futures Planning is critical to:
  - capturing the strengths and needs of the individual
  - planning natural and paid supports for all aspects of adult living. EMERGING

Findings: School Placements & Inclusion (all EMERGING)

- Given diversity of population, a diverse range of placement options are needed

- Engagement in general education curriculum

- Low adult-student ratios are needed

- Collaborative teaming, including someone with DB expertise. Now-Interprofessional Collaborative Practice (IPCP)-World Health Organization (WHO)

- Paraprofessionals or interveners with appropriate professional preparation

- Universal Design for Learning principles-multiple means of representation; multiple means of action & expression; and multiple means of engagement
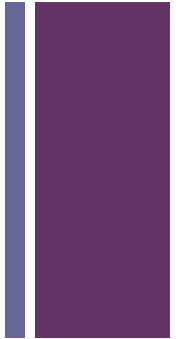
Summary of Highest Need Areas for Future Research

- Math

- Science

- Literacy (especially traditional reading and writing, in print and in braille)

- Transition

- O & M

- We need higher levels of evidence for assessment (including identification of categories of accommodations and informal assessment), administration, more research on assistive technology (other than cochlear implants)

- Develop research evidence for essential components not addressed in this analysis

What can you do with these findings?

- Consider your research interests relative to research needs in field

- Consider areas that CAN be researched that currently have lower levels of evidence

- Thoroughly know the literature in your area of research

- Use findings to craft interventions for your research studies

- Advocate for evidence-based practices in classrooms and other settings

Questions and Answers

- If your question requires a longer conversation than time allows at the conference, please contact me:

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  - +1 617-552-4239

References

- Please see the Innovation Configuration on Sensory Disabilities to see the full list of references (across the three disability areas).

  - Ferrell, K. A., Bruce, S., & Luckner, J. L. (2014). *Evidence-based practices for students with sensory impairments.* (Document No. IC-4). University of Florida, CEEDAR Center.

   http://ceedar.education.ufl.edu/tools/innovation-configurations/

Easiest to locate by:

- Google: CEEDAR Center-then click on "Innovation Configuration" heading within GOOGLE-as opposed to going to the CEEDAR site and locating it.

References for updated topics on accommodations, communication, literacy (not included in CEEDAR review)

- Bruce, S. M., & Borders, C. (2015). Communication and language in learners who are deaf and hard of hearing with disabilities: Theory, Research, and Practice. *American Annals of the Deaf, 160,* 368-384.

- Bruce, S. M., Nelson, C., Perez, A., Stutzman, B., & Barnhill, B. A. (2016). The state of research on communication and literacy in deafbindness. *American Annals of the Deaf.*

- Bruce, S. M., Luckner, J. L., & Ferrell, K. A. (2018). Assessment of students with sensory disabilities: Evidence-based practices. *Assessment for Effective Intervention, 43,* 79-89.