

REL Southwest Ask A REL Response

August 2018

Question:

What are promising strategies for addressing the academic needs of students with low-incidence special needs in inclusion settings?

Response:

Thank you for the question you submitted to our REL Reference Desk. We have prepared the following memo with research references to help answer your question. For each reference, we provide an abstract, excerpt, or summary written by the study's author or publisher. Following an established Regional Educational Laboratory (REL) Southwest research protocol, we conducted a search for research reports as well as descriptive study articles on promising strategies for addressing the academic needs of students with low-incidence special needs¹ in inclusion settings.

We have not evaluated the quality of references and the resources provided in this response. We offer them only for your reference. Also, we searched the references in the response from the most commonly used resources of research, but they are not comprehensive, and other relevant references and resources may exist. References provided are listed in alphabetical order, not necessarily in order of relevance. We do not include sources that are not freely available to the requestor.

Research References

Algahtani, F. (2017). Teaching students with intellectual disabilities: Constructivism or behaviorism? *Educational Research and Reviews*, 12(21), 1031–1035.

<https://eric.ed.gov/?id=EJ1160452>

From the ERIC abstract: “Many teaching strategies have been postulated over the past years by various scholars in an effort to enhance the education system among students with intellectual disabilities. There is much debate on the application of constructivist and behaviorist perspectives for teaching students with intellectual disabilities as addressed in

¹ A Low Incidence Disability is defined by the Individuals with Disabilities Education Act (2004) as “a visual or hearing impairment, or simultaneous visual and hearing impairments; a significant cognitive impairment; or any impairment for which a small number of personnel with highly specialized skills and knowledge are needed in order for children with that impairment to receive early intervention services or a free appropriate public education.” Individuals With Disabilities Education Act, 20 U.S.C. § 1462(c) (2004).

this paper. Many scholars have advocated for exclusivity with regards to the use of the two approaches. However, this work recommends a combination of principles from the two approaches to best structure instructions and teaching. This paper includes a brief explanation of intellectual disabilities, a summative brief of major constructivist and behaviorist perspectives, and their implication in students with intellectual disabilities. Finally, the paper offers summary of the approaches and provides a number of recommendations for teaching intellectually challenged children in a school setting.”

Almalki, N., & Abaoud, A. (2015). Response to intervention for young children with mild, moderate/severe cognitive disabilities: Literature review. *Journal of International Education Research*, 11(1), 63–70. <https://eric.ed.gov/?id=EJ1051135>

From the ERIC abstract: “This study has discussed in-depth information about understanding the Response to Intervention (RTI) linking with children from pre-school to kindergarten (three to eight years old) who have Cognitive Disabilities (CD), including different levels from mild to moderate and/or severe. The study consists of five main sections--RTI, CD, RTI Linking with CD, teaching methods for children with CD, and how RTI helps disability in school. Each section is presented in comprehensive detail.”

Bradley-Johnson, S., Johnson, C. M., & Drevon, D. D. (2015). On CALL: One approach to improving services for students with low-incidence disabilities. *Canadian Journal of School Psychology*, 30(3), 236–245. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.835.7444&rep=rep1&type=pdf>

From the abstract: “Students with low-incidence disabilities frequently receive less than optimal psychoeducational services because the specialized tests and instructional materials required to meet their idiosyncratic needs often are unavailable due to budget constraints, inadequate training of school personnel, and the difficulty school personnel have keeping current on low-incidence disabilities. To enhance the services provided for these students, a centralized statewide lending library for school personnel serving students with low-incidence disabilities was implemented. The development of this project, its impact, and the needs of school personnel in the area of low-incidence disabilities are described.”

Browder, D. M., Trela, K., Courtade, G. R., Jimenez, B. A., Knight, V., & Flowers, C. (2012). Teaching mathematics and science standards to students with moderate and severe developmental disabilities. *Journal of Special Education*, 46(1), 26–35. Retrieved from https://libres.uncg.edu/ir/uncg/f/B_Jimenez_Teaching_2012.pdf

From the abstract: “This study evaluated strategies to teach secondary math and science content to students with moderate and severe developmental disabilities in a quasi-experimental group design with special education teachers randomly assigned to either the math or the science treatment group. Teachers in the math group implemented four math units representing four of the five national math standards. The science teachers implemented four science units representing three of eight national science content standards. A fourth standard, science as inquiry, was embedded within each of the units.

Results showed students made gains in respective content areas. Students who received instruction in math scored higher than students who received instruction in science on the posttest of math skills. Likewise, students who received instruction in science scored higher than students who received instruction in math on the posttest of science vocabulary skills. Limitations and suggestions for future research and practice are discussed.”

Driver, L., Omichinski, D. R., Miller, N., Sandella, D. & Warschausky, S. (2010). Educational solutions for children with cerebral palsy. *Journal of the American Academy of Special Education Professionals*, 100–118. <https://eric.ed.gov/?id=EJ1137131>

From the ERIC abstract: “This paper characterizes educational strengths and needs of children with cerebral palsy (CP) and connects research findings from the University of Michigan's Adapted Cognitive Assessment Lab (ACAL) to current special educational requirements. It acknowledges the uniqueness of educating a child with significant motor and communication disabilities and suggests a reasonable starting point to develop an education plan for children with CP. The authors propose two key components critical to the educational success of children with CP: Accessible Assessment and Accessible Curriculum. Emphasis is placed on the importance of working within the mandated educational guidelines to best meet the individual educational needs of students with CP. Also included in the manuscript is a comprehensive appendix of resources related to the educational needs of children who receive special education services, a resource appendix specific to reading, examples of accommodations vs. modifications, and a diagram that highlights the key concepts of this article.”

Finnegan, E. G. (2012). Two approaches to phonics instruction: Comparison of effects with children with significant cognitive disability. *Education and Training in Autism and Developmental Disabilities*, 47(3), 269–279. Retrieved from https://www.researchgate.net/publication/267841431_Two_Approaches_to_Phonics_Instruction_Comparison_of_Effects_with_Children_with_Significant_Cognitive_Disability

From the abstract: “The effects of two systematic methods of phonics instruction for children with significant cognitive disability were compared. Fifty-two participants, aged 5-12 years were randomly assigned to one of three treatment groups: (i) a synthetic phonics instruction, (ii) an analogy phonics instruction group, and (iii) a control group. Participants in the synthetic and analogy phonics groups received twelve sessions of individual instruction. Findings suggest that for many students with significant cognitive disability systematic phonics instruction is beneficial. Further research should focus on the maintenance and generalization of phonics skills acquired by children with significant cognitive disability.”

Fleury, V. P., Hedges, S., Hume, K., Browder, D. M., Thompson, J. L., Fallin, K., et al. (2014). Addressing the academic needs of adolescents with autism spectrum disorder in secondary education. *Remedial and Special Education*, 35(2), 68–79. <https://eric.ed.gov/?id=ED577938>

From the ERIC abstract: “The number of individuals with Autism Spectrum Disorder (ASD) who enter secondary school settings and access the general education curriculum continues to grow. Many educators may find they are not prepared to adapt their instruction to meet both state standards and the diverse needs of the full spectrum individuals with ASD, which has implications for postsecondary success. In this article, we present an overview of current knowledge around academic instruction for this population, specifically (a) how characteristics associated with ASD can impact academic performance, (b) academic profiles of individuals with ASD across content areas, and (c) interventions that have been successful in improving academic outcomes for this population, including special considerations for those individuals who take alternate assessments based on alternate achievement standards. We conclude by offering suggestions for future research and considerations for professional development.”

Giesen, J. M., Cavanaugh, B. S., & McDonnall, M. C. (2012). Academic supports, cognitive disability and mathematics achievement for visually impaired youth: A multilevel modeling approach. *International Journal of Special Education*, 27(1), 17–26.
<https://eric.ed.gov/?id=EJ979710>

From the ERIC abstract: Elementary and middle school students who are blind or visually impaired (VI) lag up to three years behind non-disabled peers in mathematics achievement. We investigated the impact of academic supports in the school on mathematics achievement, controlling grade, gender, cognitive disability, and family SES. Data were from SEELS (Special Education Elementary Longitudinal Study) that followed a national sample of students over six years. Analyses employed multilevel modeling. We found the extent of academic supports in the school was positively related to mathematics achievement for visually impaired (VI) students without cognitive disability but not for those with cognitive disability. Gender and socio-economic status (SES) had no effects. Achievement growth was not hampered by cognitive disability. Schools with more academic supports may enhance mathematics learning for VI students without a cognitive disability, and VI students with a cognitive disability may need both a high level of supports and specialized supports to facilitate mathematics achievement.

Hudson, M. E., Browder, D. M., & Wood, L. A. (2013). Review of experimental research on academic learning by students with moderate and severe intellectual disability in general education. *Research and Practice for Persons with Severe Disabilities*, 38(1), 17–29. Retrieved from
https://www.academia.edu/5573859/Review_of_experimental_research_on_academic_learning_by_students_with_moderate_and_severe_intellectual_disability_in_general_education

From the abstract: A review of the literature on academic learning in general education settings for students with moderate and severe intellectual disability was conducted. A total of 17 experimental studies was identified and evaluated using quality indicators for single-case design research. Studies that met or met with reservation the criteria established for quality research were used to determine the evidence base of the instructional strategies described in the literature. The review found embedded instruction trials using constant time delay to be an evidence-based practice for teaching academic

content to students with moderate and severe intellectual disability in general education. In addition, strategies that were not yet evidence-based but showed promise in the literature for teaching academic content to students with moderate and severe intellectual disability in general education were described. Last, implications for practice and directions for future research were discussed.

Jackson, R. (2005). *Curriculum access for students with low-incidence disabilities: The promise of universal design for learning*. Wakefield, MA: National Center on Accessing the General Curriculum. (Links updated 2011). Retrieved from <http://aem.cast.org/about/publications/2005/ncac-curriculum-access-low-incidence-udl.html>

From National Center on Accessible Educational Materials description: “The Individuals with Disabilities Education Act (IDEA) of 1997 and 2004 set forth requirements to improve access to the general curriculum for students with low-incidence disabilities. Universal design for learning (UDL) is discussed as a theoretical framework to guide the design and development of learning environments that represent materials in flexible ways and offers a variety of options for learners to comprehend information, demonstrate their knowledge and skills, and be motivated to learn. Low-incidence disabilities such as blindness, low vision, and deafness rarely exceed 1% of the school-aged population at any given time. The rarity of students with these disabilities in public schools often poses significant challenges for local schools to meet their needs. Additionally, public schools often struggle to find a least restrictive environment for these students within their own local school system. Addressing the intense and complex needs of students with low-incidence disabilities is described according to IDEA ’97. Low-incidence disabilities are defined and described under the categories of blind/low vision, deaf/hard-of-hearing, deaf-blind, significant developmental delay, significant physical and multiple disability, and autism spectrum.

Curriculum and instructional practices that are currently used with students with low-incidence disabilities are discussed. Physical facilities, technology, media and materials, and human resources all contribute to the quality of what transpires in schools and there remains great disparity across communities. The general curriculum is defined as the overall plan for instruction adopted by the school or school system. A quality education for students with low-incidence disabilities will be a blending of curriculum, designed to address disability-specific or unique needs and curriculum designed for optimal functioning. Planning models used for students with low-incidence disabilities are discussed including the Individualized Educational Plan (IEP), Person-centered Planning, Group Action Planning (GAP), Making Action Plans (MAPs), Planning Alternative Tomorrows with Hope (PATH), and Circle of Friends. Approaches for enabling students with low-incidence disabilities to participate in state- and district-level assessment systems are included. Lastly, the UDL framework is discussed in terms of increasing access to the general curriculum for students with low-incidence disabilities.”

Kurth, J., Gross, M., Lovinger, S., & Catalano, T. (2012). Grading students with significant disabilities in inclusive settings: Teacher perspectives. *Journal of the International Association*

of *Special Education*, 13(1), 41–57. Retrieved from <https://www.iase.org/Publications/JIASE%202012.pdf>

From the abstract: “The present study describes teacher (K-12) opinions and practices related to grading and providing modified instruction, assignments, and assessments for students with low-incidence disabilities in inclusive settings. One hundred and thirty-nine teachers working in K-12 inclusive schools in Arizona and California completed an on-line survey regarding modifications to the general education curriculum and grading practices. Findings of this study include: (a) general and special education teachers use different practices and have different preferences for grading students with disabilities; (b) General and special educators also reported differences in their level of comfort and training for grading, with special educators feeling more prepared to grade students with disabilities; (c) Elementary teachers were more likely to accept modified work than secondary teachers; (d) Secondary teachers report using modifications to instruction less frequently than elementary school teachers. Implications and recommendations based on these findings are reported.”

Leppo, R. H. T., Cawthon, S. W., & Bond, M. P. (2014). Including deaf and hard-of-hearing students with co-occurring disabilities in the accommodations discussion. *Journal of Deaf Studies and Deaf Education*, 19(2), 189–202. <https://eric.ed.gov/?id=ED562352>

From the abstract: “(Purpose) Students who are deaf or hard of hearing (SDHH) are a low-incidence group of students; however, SDHH also have a high incidence of additional disabilities (SDHH+). Many SDHH and SDHH+ require accommodations for equal access to classroom instruction and assessment, particularly in mainstreamed educational settings where spoken English is the primary language. Accommodations for SDHH, overall, have increased under federal legislation including the Individuals with Disabilities Education Improvement Act and the No Child Left Behind Act. Unfortunately, specific practice recommendations for SDHH+ and their unique needs are often lacking in the research literature. (Methodology) This article presents findings regarding accommodations use by SDHH and SDHH+ from the National Longitudinal Transition Study 2. (Conclusions) Initial logistic regression analysis found no differences in accommodations use of SDHH and SDHH+. However, logistic regression analysis that compared specific additional disability groups with the larger overall SDHH group did find differences in accommodations use for two SDHH+ groups: students who had a learning disability and students with attention deficit hyperactivity disorder. (Recommendations) This article includes a discussion of the implications of these findings for both research and practice.”

Mockler, K. (2014). Establishing and maintaining high expectations for deaf/blind students using a team approach. *Odyssey: New Directions in Deaf Education*, 15, 50–53. <https://eric.ed.gov/?id=EJ1030917>

From the ERIC abstract: “As a teacher of the deaf as well as the classroom teacher, Kimberly Mockler works very closely with the teacher of the visually impaired. This involves sharing ideas, resources, and lesson plans for the deaf/blind students. Their

lessons and goals are very similar and overlap in several areas. A major challenge for both of them is maintaining high expectations for their students while still presenting lessons at the appropriate cognitive level. The teacher of the visually impaired and Mockler are presented daily with the task of helping the students learn to be independent and not depend on prompts to perform basic tasks. For example, students should not have to be prompted to open and close doors, pull out and push in chairs, feed themselves, get dressed and undressed, or use the toilet. This article provides a look at a program for Deaf/ Blind students at St. Francis de Sales School for the Deaf in Brooklyn, New York. The program was established in 2009, and involved the creation and maintenance of a collaborative team to establish and pursue high expectations for Deaf/Blind students.”

Spooner, F., Knight, V., Browder, D., Jimenez, B., & DiBiase, W. (2011). Evaluating evidence-based practice in teaching science content to students with severe developmental disabilities. *Research and Practice for Persons with Severe Disabilities*, 36(1/2), 62–75.
https://libres.uncg.edu/ir/uncg/f/B_Jimenez_Evaluating_2011.pdf

From the abstract: “A comprehensive review of the literature was conducted for articles published between 1985 and May 2009 to (a) examine the degree to which science content was taught to students with severe developmental disabilities and (b) and evaluate instructional procedures in science as evidence-based practices. The review was organized by a conceptual model developed for science content. Seventeen experiments were analyzed for research quality where science content was taught to this population; 14 of these studies were viewed to be of high or adequate quality. In general, we found systematic instruction as an overarching instructional package to be an evidence-based practice for teaching science content. Furthermore, components of systematic instruction (i.e., task analytic instruction and time delay) were analyzed. We discuss the outcomes to reflect how to teach science, what science content to teach, why to teach science, and recommendations for future research and practice.”

Additional Organizations to Consult

Institute on Community Integration (ICI)—<https://ici.umn.edu/>

From the website: “The Institute on Community Integration (ICI) was established in 1985 on the Twin Cities campus of the University of Minnesota. We are a federally designated University Center for Excellence in Developmental Disabilities (UCEDD—pronounced *U Said*), part of a [national network](#) of similar programs in major universities and teaching hospitals across the country. The Institute is home to over 70 projects and 6 Affiliated Centers addressing disability issues across the lifespan (see [Projects + Centers](#) for a complete listing). In addition, it works in close collaboration with the University’s [Center for Early Education and Development](#), a Partner Center of the Institute.”

ICI’s program areas: <https://ici.umn.edu/welcome/default.html#areas>

National Center on Educational Outcomes—<https://nceo.info/>

From the website: “NCEO helps students with disabilities, English learners (ELs), and ELs with disabilities by:

- Collecting, analyzing, synthesizing, disseminating, and providing leadership on evidence-based information on inclusive assessments and comprehensive assessment systems.
- Promoting the use of assessments for instructional decision-making purposes.
- Assisting states in their efforts to support districts to improve results.
- Reviewing the participation and performance of students in national and state assessments, including the use of accessibility features and accommodations and alternate assessments.
- Examining national and state practices in reporting assessment information.
- Supporting implementation of U.S. Department of Education accountability systems, including ESEA accountability and IDEA State Systemic Improvement Plans (SSIPs) and State-Identified Measurable Results (SIMRs).
- Bridging general education, special education, English as a Second Language or bilingual education, and other systems as they work to improve results of education for all students.

Students with Disabilities: https://nceo.info/student_groups/students_with_disabilities

Resources (publications, tools, FAQs, newsletters, bibliographies, and more):
<https://nceo.info/Resources>

National Center on Intensive Intervention—<https://intensiveintervention.org/>

From the website: “NCII builds the capacity of state and local education agencies, universities, practitioners, and other stakeholders to support implementation of intensive intervention in literacy, mathematics, and behavior for students with severe and persistent learning and/or behavioral needs, often in the context of their multi-tiered system of support (MTSS) or special education services. NCII’s approach to intensive intervention is data-based individualization (DBI), a research-based process that integrates the systematic use of assessment data, validated interventions, and intensification strategies.”

Relevant links at the site:

1. Academic Intervention—<https://charts.intensiveintervention.org/chart/instructional-intervention-tools>

“This tools chart presents information about academic intervention programs. The following four tabs include information and ratings on the technical rigor of the studies:

- Study Quality
- Study Results
- Intensity

- Additional Research

The chart reviews studies about the intervention programs. As a result, you may see the intervention appear more than one time and receive different ratings.”

2. Behavioral Intervention—<https://charts.intensiveintervention.org/chart/behavioral-intervention-chart>

“This tools chart presents information about behavioral intervention programs. The following four tabs include information and ratings on the technical rigor of the studies

- Study Quality
- Study Results
- Program Information
- Additional Research

The chart reviews studies about the intervention programs. As a result, you may see the intervention appear more than one time and receive different ratings.”

National Center for Special Education Research (NCSER)—<https://ies.ed.gov/ncser/>

From the website: “The National Center for Special Education Research (NCSER), one of the four Centers within the Institute of Education Sciences, supports rigorous research on infants, toddlers, children, and youth with and at risk for disabilities through advancing the understanding of and practices for teaching, learning, and organizing education systems. NCSER supports such research through its research grants program to identify existing practices, programs, or policies that may be associated with student outcomes; develop new, or modify existing, interventions; evaluate the efficacy and effectiveness of fully developed interventions; and develop and validate measures and assessments. NCSER-supported Research and Development Centers aim to address important issues in special education by implementing large-scale but focused programs of research and leadership activities. Through its research training programs, NCSER supports institutions to train postdoctoral fellows, individual early career scientists, and methodology training institutes to develop the research skills in our next generation of special education researchers.”

TIES Center—<https://tiescenter.org/>

From the website: “TIES Center is working with states, districts, and schools to support the movement of students from less inclusive to more inclusive environments. Project goals to accomplish this are:

- Develop professional learning communities in partner state and local education agencies.
- Develop coaching models for implementation of resources, inclusive practices, and communicative competence.
- Improve the efficiency and effectiveness of existing resources.

- Support parents to become partners in the practice of inclusion for students with significant cognitive disabilities.
- Support systems change within the leadership of state and local education agencies for implementation of inclusive practices.”

TIES Center resources: <https://tiescenter.org/resources>

U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Education Programs—<https://www2.ed.gov/about/offices/list/osers/osep/index.html>

From the website: “The Office of Special Education Programs (OSEP) is dedicated to improving results for infants, toddlers, children and youth with disabilities ages birth through 21 by providing leadership and financial support to assist states and local districts.

The Individuals with Disabilities Education Act of 2004 (IDEA) authorizes formula grants to states and discretionary grants to institutions of higher education and other non-profit organizations to support research, demonstrations, technical assistance and dissemination, technology and personnel development and parent-training and information centers.”

What Works Clearinghouse—<http://ies.ed.gov/ncee/wwc/>

From the website: “The What Works Clearinghouse (WWC) was established in 2002 as an initiative of the Institute for Education Sciences (IES) at the U.S. Department of Education. The WWC is administered by the National Center for Education Evaluation within the IES. The goal of the WWC is to be a resource for informed educational decision-making. To reach this goal, the WWC identifies studies that provide credible and reliable evidence of the effectiveness of a given practice, program, or policy (referred to as “interventions”) and disseminates summary information and reports on the WWC website.”

Children and Youth with Disabilities:

<https://ies.ed.gov/ncee/wwc/FWW/Results?filters=,Children-Youth-with-Disabilities>

Methods

Keywords and Search Strings

The following keywords and search strings were used to search the reference databases and other sources:

- Addressing low-incidence special needs in inclusion settings
- Low-incidence special needs and inclusion
- Low incidence special needs and inclusion strategies
- Low-incidence AND special + education AND inclusion

- Cognitive disability
- Down Syndrome
- Intellectual disability
- Autism
- Deaf
- Blind
- Deaf-blind
- Cerebral palsy
- Diane Browder

Databases and Resources

We searched ERIC for relevant, peer-reviewed research references. ERIC is a free online library of more than 1.6 million citations of education research sponsored by the Institute of Education Sciences (IES). Additionally, we searched the What Works Clearinghouse.

Reference Search and Selection Criteria

When we were searching and reviewing resources, we considered the following criteria:

- *Date of the publication:* References and resources published from 2003 to present, were included in the search and review.
- *Search priorities of reference sources:* Search priority is given to study reports, briefs, and other documents that are published and/or reviewed by IES and other federal or federally funded organizations, academic databases, including ERIC, EBSCO databases, JSTOR database, PsychInfo, PsychArticle, and Google Scholar.
- *Methodology:* The following methodological priorities/considerations were given in the review and selection of the references: (a) study types—randomized control trials, quasi-experiments, correlational studies, descriptive data analyses, literature reviews, mixed methods analyses, and so forth; (b) target population, samples (representativeness of the target population, sample size, volunteered or randomly selected, and so forth), study duration, and so forth; and (c) limitations, generalizability of the findings and conclusions, and so forth.

This memorandum is one in a series of quick-turnaround responses to specific questions posed by stakeholders in the Southwest Region (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas), which is served by the Regional Educational Laboratory (REL) Southwest at AIR. This memorandum was prepared by REL Southwest under a contract with the U.S. Department of Education’s Institute of Education Sciences (IES), Contract ED-IES-91990018C0002, administered by AIR. Its content does not necessarily reflect the views or policies of IES or the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.