Strategies to Improve Access to the General Education Curriculum
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Strategies to Improve Access to the General Education Curriculum

Education professionals increasingly focus on identifying programs, practices, and strategies that are research based. To be considered as the highest (“gold”) standard of research based, educational practices must have evidence (a) that is supported by rigorous and scientific data (high quality) and (b) that has a body of studies that demonstrate positive outcomes (high quantity). The No Child Left Behind (NCLB) Act passed in 2001 (www.nclb.gov) and many federal grant programs call on educators to use scientifically-based research to drive their decisions about educational interventions.

To be considered scientifically based, research should be objective, empirical, replicable, have valid and reliable data, use particular research designs, and use rigorous data analysis (See Identifying and Implementing Educational Practices Supported by Rigorous Evidence: A User-Friendly Guide. Available at: www.ed.gov/rschstat/research/pubs/rigorousevid/guide_pg3.html).

In general, more research needs to be conducted that uses the “gold standard” of scientific rigor. In addition, more careful review of existing research needs to occur in order to evaluate and synthesize evidence relating to programs and practices. As an example, the U.S. Department of Education has funded the What Works Clearinghouse (www.w-w-c.org) to serve as an independent source of scientific evidence of what works in education. However, such careful and systematic reviews take an enormous amount of time and manpower.

In the meantime, a body of research does suggest that specific programs and practices are effective with particular students. Increasing exposure to such research-supported instructional methods and practices, materials and media, and supports and accommodations will help students with disabilities effectively engage in learning general education curriculum content.

The strategies that appear in this chart have varying levels of research support. The Access Center classifies strategies on a continuum depending on their research base. “Green light” strategies are evidenced based practices while “yellow light” strategies are promising practices but require further validation and thus should be used with caution. Analysts at the Access Center use several approaches for classifying the level of research that supports each strategy. For some strategies we borrowed guidelines used for the Current Practice Alerts developed by the Division of Learning Disabilities and the Division of Research of the Council for Exceptional Children (CEC). Where we highlight strategies that were not included in CEC’s Current Practice Alerts, we rely on the research continuum developed by the Access Center to classify practices and on experts who bring their knowledge of research-based practices.

The Access Center identifies the approach used for classifying each strategy in the chart.

To assist state and local technical assistance providers and administrators in selecting research-supported practices, the professionals at the Access Center compiled information on strategies in the following areas: Instructional Methods and Practices, Media and Materials, Supports and Accommodations, and Assessment. The following information is provided for each research-supported practice:

- **Student Characteristics Addressed**: specifies the types of challenges the strategy targets
- **Practice Description**: gives specific information regarding the use of the strategy
• *How It Improves Access*: explains how effective implementation can improve access to the general education curriculum for students with disabilities
• *Supporting Research*: identifies sources of findings on the practice
• *Implications for Practice*: outlines considerations for implementation, including costs
• *Sources of Additional Information*: lists additional websites and resources for more information about the practice

In addition, several of the research-supported practices include links to content-area “applications.” These applications expand on the practice and provide an explanation of how it can be used within a particular content area.

The Access Center will continue to expand this list and provide additional information about these and other research-supported interventions on our website ([www.k8accesscenter.org/](http://www.k8accesscenter.org/)) as they become available. Check back frequently for more resources and information about effective practices to improve access to the general education curriculum for students with disabilities.
### Instructional Strategies

*Instructional Strategies – Methods that can be used to deliver a variety of content objectives. How a course of study/curriculum should be taught.*

### Differentiated Instruction

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Center Research Continuum</td>
<td>Differentiated instruction – ▪ addresses student readiness, which includes prior knowledge and skills ▪ addresses student interest ▪ addresses a student's learning profile, which includes learning style, environmental factors that affect the student's learning, and the student's grouping preferences</td>
<td>Teachers diagnose student readiness, interest, and learning profile. Instruction incorporates specific strategies that meet the needs of students and are based on the curriculum being presented. On-going assessment allows teachers to adjust instruction in response to student needs.</td>
<td>Enables students to access information using modalities that best meet their needs. Information is presented at students' individual readiness levels.</td>
<td>Requires time for planning and implementation. May require support from administration and co-teachers. May require a high level of student investment.</td>
</tr>
</tbody>
</table>

### Application to -

- **Math**
- **Reading**
- **Writing**
- **Science**

### Supporting Research

Qualitative and meta-analysis research indicate:

That students in differentiated classrooms achieve better outcomes than students in classrooms without differentiation (Csikszentmihalyi, Rathunde, & Whalen, 1993; Tomlinson, Brighton, Hertberg, Callahan, Moon, Brimijoin, et al., 2003)

When instructional materials are differentiated to meet student needs, interests, and readiness, academic gains increase (Kulik & Kulik, 1991; Lou, Abrami, Spence, Poulsen, Chambers, & d’Apollonia, 1996).
## Instructional Strategies

*Instructional Strategies – Methods that can be used to deliver a variety of content objectives. How a course of study/curriculum should be taught.*

### Computer Assisted Instruction (CAI)

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Center Research Continuum</td>
<td>Children with – Fine motor challenges Attention deficit Minimal organizational strategies Difficulty decoding and comprehending text Communication delays Weak problem-solving skills Difficulty with abstract concepts</td>
<td>Computer programs or high-tech equipment provide content instruction to students to enable them to meet standards and goals. Sample features– Independent instruction for student May measure student skill and progress Interactive Immediate feedback</td>
<td>Allows multiple means of interacting with curricular materials Allows teachers to individualize lessons to meet children’s specific goals while helping them meet state and local standards</td>
<td>Allows great flexibility in use because it is not subject specific Requires professional development for use in classrooms Requires purchase of technology and software if not currently available Requires that individuals with expertise be available for trouble shooting Requires time for teacher planning and instructing students to use software</td>
</tr>
</tbody>
</table>

### Application to -

- **Math**
- **Reading**
- **Writing**
- **Science**

### Supporting Research

CAI may be an academic motivator for students with disabilities (Hitchcock & Noonan, 2000). CAI increases wait time and builds on mastered skills (Hitchcock & Noonan, 2000; Zimmerman, 1998). Effectiveness is attributed to the higher interaction required for responses and active learning (Lahm, 1996). Varying results of effectiveness from research (Kroesbergen & Van Luit, 2003)
# Instructional Strategies

**Instructional Strategies** – Methods that can be used to deliver a variety of content objectives. How a course of study/curriculum should be taught.

## Concrete, Representations (Semi concrete), and Abstract Sequence of Mathematics Instruction (CRA or CSA)

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Center Research Continuum</td>
<td>Students who are in general education, at risk and/or in special education Students with difficulties in these areas— using symbols and abstract mathematical concepts processing information sustaining attention to task monitoring and self-regulating performing basic math skills reasoning and using problem-solving skills</td>
<td>Three phases— Concrete phase of mathematical concept uses hands-on manipulatives Representations phase uses pictorial display Abstract phase uses numerical symbols or algebraic letters of abstract mathematical concepts Repetition of different types of manipulatives or representations of same concept Graduated and conceptually supported framework for creating connection between C–R–A levels of understanding</td>
<td>Enables children to— retrieve background knowledge and become confident with an approach to reason Provides a path for more complex problem-solving situations Addresses student learning styles by providing visual, tactile, and kinesthetic experiences Allows group or individual instruction Allows students to move in a structured way from concrete to abstract concepts through pictorial representations such as charts, graphs, symbols, and diagrams Facilitates abstract reasoning with numerical symbols</td>
<td>May require purchase of commercial materials (e.g., number cubes, fraction bars, geometric figures) May require time to practice repetition of sequence to establish understanding of concept May require professional development for teachers to learn to model concrete and visual materials establishing links to abstract concepts</td>
</tr>
</tbody>
</table>

### Supporting Research

Builds a foundation with structured concrete materials for developing concepts in number sense, geometry, statistics, story problems, and measurement (Bruni & Silverman, 1986; NCTM, 2000)

Develops more precise and comprehensive mental representations (Suydam & Higgins, 1977)

Allows students to understand numerical symbols and abstract equations at a concrete level (Devlin, 2000; Maccini & Gagnon, 2000)

Facilitates learning place value (Peterson, Mercer, O'Shea, 1988)

Facilitates development of computation skills (Mastropieri, Scruggs, & Shiah, 1991)

Promotes acquisition and retention of arithmetic facts and mathematics concepts (Miller & Mercer, 1993)
### Instructional Strategies

**Instructional Strategies** – Methods that can be used to deliver a variety of content objectives. How a course of study/curriculum should be taught.

### Grouping Strategies

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Center Research</td>
<td>Children with –</td>
<td>After assessing</td>
<td>Enables teachers to</td>
<td>Requires sophisticated</td>
</tr>
<tr>
<td>Continuum</td>
<td>Communication delays</td>
<td>students' needs,</td>
<td>use various types of</td>
<td>classroom management</td>
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<tr>
<td></td>
<td>Delays in mathematical concepts</td>
<td>teachers plan</td>
<td>groups to ensure</td>
<td>skills</td>
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<tr>
<td></td>
<td>Difficulty decoding and</td>
<td>activities using</td>
<td>that students have</td>
<td>Requires time to plan</td>
</tr>
<tr>
<td></td>
<td>comprehending text</td>
<td>various types of</td>
<td>appropriate models and</td>
<td>and evaluate with other</td>
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<tr>
<td></td>
<td>Weak problem-solving skills</td>
<td>groups to ensure</td>
<td>individual attention</td>
<td>team members (who may be</td>
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<tr>
<td></td>
<td>Difficulty with abstract</td>
<td>that students'</td>
<td>to facilitate access</td>
<td>working with groups or</td>
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<tr>
<td></td>
<td>concepts</td>
<td>needs and interests</td>
<td></td>
<td>individuals)</td>
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<tr>
<td></td>
<td>Lack of organizational skills</td>
<td>targeted</td>
<td></td>
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<tr>
<td></td>
<td>Lack of attention</td>
<td>Example groupings</td>
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<td></td>
<td></td>
<td>include pairing,</td>
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<td>smaller teacher-led</td>
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<td>groups, and multiple</td>
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<td>grouping (vary the</td>
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<td>grouping from day to</td>
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<td>day) formats. .</td>
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</table>

**Supporting Research**

Flexible grouping allows teachers to meet the needs of specific children while targeting interests (NCREL)

Groups provide opportunities for improved social and academic interaction (Johnson & Johnson, 2000; Vaughn et al., 2001)

In comparison studies, students in alternative groupings (compared with traditional whole class grouping) for reading demonstrated higher success rates for students with disabilities (Elbaum et al., 2000)
### Instructional Strategies

*Instructional Strategies – Methods that can be used to deliver a variety of content objectives. How a course of study/curriculum should be taught.*

### Grouping Strategies - Peer Assisted Learning Strategies (PALS)

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Children with –</td>
<td>Students interact through “coach/player” pairings in structured cooperative-learning activities.</td>
<td>Groups students with and without disabilities to assist with comprehension of general education content</td>
<td>Provides a complement to current reading and mathematics curricula</td>
</tr>
<tr>
<td></td>
<td>Difficulty decoding and comprehending text</td>
<td>Students support each other through frequent oral interaction, feedback, and reinforcement.</td>
<td>Promotes meaningful social interaction between peers with and without disabilities</td>
<td>Requires a set period of time for implementation: 25–35 mins/2 or3 times a week</td>
</tr>
<tr>
<td></td>
<td>Communication delays</td>
<td>Programs are available in reading for grades preschool–6 and mathematics for grades K–6.</td>
<td>Requires professional development (workshop training and teacher manual)</td>
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<tr>
<td></td>
<td>Delays in mathematical concepts</td>
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<tr>
<td></td>
<td>Difficulty with abstract concepts</td>
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<tr>
<td></td>
<td>Noncompliant behaviors</td>
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<td></td>
<td>Aggressive behaviors</td>
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<td></td>
<td>Lack of attention</td>
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<tr>
<td></td>
<td>Lack of organizational skills</td>
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</tbody>
</table>

### Supporting Research

PALS is approved by the U.S. Department of Education’s Program Effectiveness Panel for Inclusion in the National Diffusion Network on effective educational practices (John F. Kennedy Center for Research on Human Development, 1999).

Improves student test performance on a number of reading measures (Fuchs, Fuchs, Mathes, & Simmons, 1997; Fuchs, & Fuchs, 1998).

PALS enables students to make connections with abstract mathematical concepts (Fuchs, Fuchs, 01; Fuchs et al., 1997).
## Instructional Strategies

**Instructional Strategies** – Methods that can be used to deliver a variety of content objectives. How a course of study/curriculum should be taught.

### Direct Instruction

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At risk students including those students with disadvantaging conditions, including students with disabilities and those from various social and economic levels. Struggling readers who have difficulty decoding and comprehending text. Primarily a pre-K-6 program, however also proven effective with secondary, adult special education and remedial students.</td>
<td>An explicit, teacher-directed instructional model. The focus of DI is curriculum design and instructional delivery. Major program features include: • research tested curriculum • systematic and explicit instruction • coaches/facilitators • rapid pace • achievement grouping • scripted class sessions • intense, constant student interaction • teaching to mastery • frequent assessments</td>
<td>Access to the general education curriculum is of little value unless ALL students have the opportunity to gain the skills necessary for academic success. Direct Instruction has been proven to be an effective strategy in improving the reading skills of struggling readers, regardless of reason. Since reading is the foundational skill for all learning, the ability to read well is essential for ALL students’ success in the general education curriculum. Direct instruction has been proven to be an effective instructional strategy in reading, language arts, spelling and math; all fundamental skills required for success in the general curriculum.</td>
<td>Will require the purchase of a commercial program and materials based on this instructional model. Will require professional development and implementation supports to insure fidelity of implementation. Teachers and support personnel must be prepared for the program’s fast pace and the structured, repetitive nature of the program. Must have teacher buy-in. Teachers must be fully informed of the research that supports Direct Instruction as being a proven effective instructional model. May require in-class coaches for implementation support.</td>
</tr>
</tbody>
</table>

### Supporting Research

## Learning Strategies


Students do this.

### Learning Strategies

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Center Research Continuum and expert recommendations</td>
<td>Children with – Difficulty decoding and comprehending text Communication delays Lack of organizational skills Weak problem-solving skills Difficulty with abstract concepts Delays in mathematical concepts Short- and long-term memory problems</td>
<td>Techniques, principles, or rules help students acquire, store, use, and retrieve information in various settings. According to NICHCY (1997a), learning strategies generally fall into two categories– – Cognitive (i.e., task-specific, such as taking notes, making an outline, and asking questions – Metacognitive (i.e., self-regulation, such as goal-setting, self-monitoring, and self-questioning).</td>
<td>Enables students to learn and remember key concepts, thus enabling students to actively engage in curriculum content Helps students learn how to learn and allows them to become independent learners Increases students’ confidence in their academic abilities</td>
<td>Requires professional development (e.g., different learning strategies, their benefits and uses) Requires teachers to plan time to teach these learning strategies Several models for teaching learning strategies are discussed in the literature (e.g., SIM, self-regulated learners, and cognitive instruction)</td>
</tr>
</tbody>
</table>

**Application to -**

- **Math**

### Supporting Research

Students show improved independence in completing tasks, including improved reading comprehension (Alley & Deshler, 1979).

Students better understand individual learning process (NICHCY, 1997a)

Students give more attention to learning (NICHCY, 1997a)
### Learning Strategies


<table>
<thead>
<tr>
<th>Mnemonics</th>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Children with – Short- and long-term memory problems</td>
<td>Mnemonics improves memory by linking new information to current knowledge through visual and verbal cues.</td>
<td>Gives students tools to encode information so they can retrieve it later</td>
<td>Requires minimal professional development for teachers and minimal additional resources beyond initially learning the mnemonic strategies</td>
<td>Use can be across multiple content areas (language arts, mathematics, science, foreign language, etc.)</td>
</tr>
<tr>
<td></td>
<td>Difficulty with abstract problems</td>
<td>Includes three methods—Keyword (linking new information to known words) Pegword (using rhyming word to represent number or order) Letter strategies (using acronyms and acrostics)</td>
<td>Allows better understanding of subject-area content</td>
<td></td>
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<tr>
<td></td>
<td>Difficulty with decoding</td>
<td></td>
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<tr>
<td></td>
<td>Lack of organizational skills</td>
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</tbody>
</table>

### Supporting Research

Strategy is effective for increasing comprehension test scores (Mastropieri, Sweda, & Scruggs, 2000; Uberti, Scruggs, & Mastropieri, 2003).

Gains have been shown on criterion-referenced tests and criterion-referenced measures (Swanson, 1999; Forness, Kavale, Blum, & Lloyd, 1997).
## Materials and Media
### Adapted Books/Texts

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Center Research Continuum</td>
<td>Children with –</td>
<td>Texts and general education materials are modified.</td>
<td>Students spend a large amount of time interacting with text, much of which is developmentally inappropriate or inaccessible to different types of learners.</td>
<td>Requires teachers and specialists to identify specific goals and add adaptations to books or create adapted books to accommodate and individualize for students in classrooms</td>
</tr>
<tr>
<td></td>
<td>Difficulty decoding and comprehending text</td>
<td>Low-technology materials (e.g., stickers, fabric, glue, highlighting)</td>
<td></td>
<td>Requires time to create and collaborate on books</td>
</tr>
<tr>
<td></td>
<td>Communication delays</td>
<td>High-technology materials (e.g., talking switches, communication devices, talking books software, textbooks on tape)</td>
<td></td>
<td>Can be expensive depending on the quantity and level of technology involved</td>
</tr>
<tr>
<td></td>
<td>Lack of organizational skills</td>
<td></td>
<td>Adapted texts and books are used in the general education curriculum to allow the participation of students with disabilities</td>
<td>Requires time to teach children how to use adapted books and may need one-on-one or small-group support while learning</td>
</tr>
<tr>
<td></td>
<td>Gross/fine motor deficiencies</td>
<td></td>
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<tr>
<td></td>
<td>Cognitive delays</td>
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<tr>
<td></td>
<td>Visual impairments</td>
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<td></td>
<td>Lack of attention</td>
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</tbody>
</table>

### Supporting Research

Student differences significantly affect how they perceive and process information (Curry, 2003).

Adapted texts allow more individuals to participate in the curriculum (Higgins, Boone, & Lovitt, 2002; Robinson, 2000).
<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classroom environment</strong></td>
<td>Children with –</td>
<td>Classroom environment ensures accessible literacy experiences through –</td>
<td>Provides students access to literacy by immersing them in an environment of print</td>
<td>Requires that teachers have time to set up the environment, such as labeling everything with pictures and words</td>
</tr>
<tr>
<td><strong>Labels (pictorial and word)</strong></td>
<td>Difficulty decoding and comprehending text</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Communication delays</td>
<td>Large supplies of books</td>
<td>Provides students multiple opportunities for interaction with literacy (through words and books), which enables them to interact with the general education curriculum</td>
<td>Requires resources to purchase materials, such as books and magazines</td>
</tr>
<tr>
<td></td>
<td>Lack of literacy-rich environment outside of school</td>
<td>Multiple writing opportunities (pencils/paper, computer, typewriter, etc.)</td>
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<tr>
<td></td>
<td></td>
<td>Reading opportunities during school day</td>
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<td></td>
<td></td>
<td>Teachers engage in language and literacy activities throughout instruction.</td>
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<tr>
<td></td>
<td></td>
<td>Students actively engage in reading and writing projects throughout the curriculum.</td>
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</tr>
</tbody>
</table>

**Supporting Research**

Opportunities to engage in reading and writing activities increase literacy skills when connected to the real-world experiences of students with disabilities (Katims & Pierce, 1995).

Opportunities to explore literature and intentional instruction facilitate development (Gunn, Simmons, & Kameenui, 1995; Snow, Burns, & Griffin, 1999; Whitehurst, 2003).
<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
<th>Student Characteristics Addressed</th>
<th>Practice Description</th>
<th>How It Improves Access</th>
<th>Implications for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Center Research Continuum</td>
<td>Children with – Needs for related services provided by more than one specialist Needs for paraprofessional support Issues needing the expertise of more than one individual</td>
<td>Teachers and related service providers meet on a regular basis to problem solve, plan, and implement strategies to ensure that each student is able to participate in the general education curriculum. Collaboration partners vary depending on student need. Sample collaborators— • Regular and special educators Regular, special, and speech educators, occupational therapists, physical therapists, nurses, and psychologists</td>
<td>Creates communication and support among multiple service providers Enhances and builds on the student’s access to the general education curriculum Ensures that all providers integrate their services with one another</td>
<td>Requires that teachers and related service providers communicate and send one message to parents and child Builds on partner strengths to ensure that lessons are accessible to students with disabilities Requires that time be built into the schedule for collaborative planning, implementation, and evaluation Requires that teachers be willing to share their space and welcome other professionals into their teaching Requires time and effort to build trust</td>
</tr>
</tbody>
</table>

**Supporting Research**

Collaboration streamlines instruction, prevents removal of students from general education classrooms, and ensures the integration of goals and standards to create success within the curriculum (Flemming & Monda-Amaya, 2001; Friend & Cook, 2000).

Academic growth for students with severe emotional disabilities is attributed to more teacher attention, reduced teacher-pupil ratios, and more individual assistance provided through collaboration (Carter, 2000).
## Assessment
### Curriculum Based Measurement (CBM)

<table>
<thead>
<tr>
<th>Research-Supported Practice</th>
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<tr>
<td>Access Center Research Continuum</td>
<td>Children with —</td>
<td>CBM is a valid and reliable form of curriculum-based assessment.</td>
<td>Assesses students’ progress toward year-end academic goal</td>
<td>Allows teachers to easily track progress over time</td>
</tr>
<tr>
<td></td>
<td>Communication delays</td>
<td>CBM monitors academic progress in basic skills with short (1–3 minute) probes of reading, spelling mathematics, and writing fluency.</td>
<td>Monitors students on an ongoing basis, provides information about students’ strengths and areas for improvement</td>
<td>Allows teachers to evaluate effects of interventions</td>
</tr>
<tr>
<td></td>
<td>Delays in mathematical concepts</td>
<td>The student’s progress is measured against self and class.</td>
<td>Allows teachers to recognize learning difficulties and make immediate instructional changes that meet students’ needs</td>
<td>Requires minimal time for teachers to learn CBM method</td>
</tr>
<tr>
<td></td>
<td>Difficulty decoding and comprehending text</td>
<td>CBM allows for data-based decision making through a multiple-step process involving testing, analysis, and planning.</td>
<td></td>
<td>Requires time to develop assessment probes and measures</td>
</tr>
<tr>
<td></td>
<td>Weak problem-solving skills</td>
<td></td>
<td></td>
<td>Computerized versions available</td>
</tr>
<tr>
<td></td>
<td>Difficulty with abstract concepts</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>Lack of organizational skills</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Lack of attention</td>
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</tbody>
</table>

### Supporting Research

Students with disabilities demonstrated increased academic growth rates in reading with use of CBM assessments (Deno, Fuchs, Marston, & Shinn, 2001).

Students worked more quickly and accurately and became more active learners (Phillips, Fuchs, & Fuchs, 1994).
## Assessment

### Functional Behavior Assessments (FBA)

<table>
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<tr>
<td></td>
<td>Children with –</td>
<td>Teachers and specialists select a target behavior then record the antecedent (incidents immediately before the targeted behavior), the behavior, and the consequence that occurs when the targeted behavior is demonstrated. Information collected from observations is used to create a positive behavioral support plan and environment.</td>
<td>Allows teachers to examine the environment and its effect on students, adapt their teaching behaviors and the environment to meet student needs</td>
<td>Requires time to watch and analyze behaviors Requires consistency in implementing functional behavior analysis (all observers must be active participants)</td>
</tr>
<tr>
<td></td>
<td>Noncompliant behaviors</td>
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<td></td>
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<tr>
<td></td>
<td>Aggressive behaviors</td>
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<tr>
<td></td>
<td>Communication delays</td>
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</table>

### Supporting Research

The OSEP 22nd annual report to Congress recommended its use as a means to individualizing to meet specific students’ needs (OSEP, 2000; Miller, Tansy, & Hughes, 1998; Miller, 2001).

Functional Behavior Assessments (FBAs) are effective in reducing problem behaviors because they are aligned with the IEP process in monitoring the accomplishment of student goals (Shippen, Simpson, & Crites, 2003).
References

Differentiated Instruction


Web Resources


Hottlinx was developed by the University of Virginia. It provides strategies, lesson plans, unit plans, and assessments to support differentiated instruction. Available at http://www.hottlinx.org/

Computer Assisted Instruction


Web Resources


CAST. Available at http://www.cast.org/
Concrete, Representations (Semiconcrete), and Abstract Sequence of Mathematics Instruction (CRA or CSA)


Grouping Strategies


Web Resources


Peer Assisted Learning Strategies (PALS)


Web Resources

PALS (Vanderbilt University) [http://kc.vanderbilt.edu/kennedy/pals](http://kc.vanderbilt.edu/kennedy/pals)

Peer Assisted Learning Strategies in Reading [http://www.ldonline.org/ld_indepth/reading/peer_assisted.html](http://www.ldonline.org/ld_indepth/reading/peer_assisted.html)


Professional Collaboration


**Inclusive Education: Developing Successful Programs. Boston: Pearson Allyn & Bacon.**

**Learning Strategies**


**Web Resources**


**Mnemonics**


**Web Resources**


Tutorial on Mnemonics by Division of Learning Disabilities of CEC (Member’s only section of website) Available at www.teachingld.org

Also see references for Learning Strategies section.

**Adapted Books and Text**


Technology specialists in your district

Web Resources

CAST. Available at [http://www.cast.org/](http://www.cast.org/)


**Literacy Rich Environments**


Web Resources


**Curriculum-Based Measurement**


**Web Resources**


**Functional Behavior Assessments**


**Web Resources**


Office of Special Education Programs. (2000). *Twenty-second annual report to Congress*. 22
For additional information on this or other topics, please contact The Access Center at accesscenter@air.org.

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