VOLUME

Curriculum

Ready

EDITED BY
Jennifer Grisham
Kristine Slentz

aeps®-3

VOLUME 5

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Ready

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Dr. Bricker served as Director of the Early Intervention Program at the Center on Human Development, University of Oregon, from 1978 to 2004. She was a professor of special education, focusing on the fields of early intervention and social communication.

Her professional interests have addressed three major areas: early intervention service delivery approaches, curriculum-based assessment and evaluation, and developmental-behavioral screening. Dr. Bricker's work in early intervention approaches has been summarized in two volumes: *An Activity-Based Approach to Early Intervention, Fourth Edition* (with J. Johnson & N. Rahn; Brookes Publishing Co., 2015), and *An Activity-Based Approach to Developing Young Children's Social Emotional Competence* (with J. Squires; Brookes Publishing Co., 2007). Her work in curriculum-based assessment and evaluation has focused on the development of the *Assessment, Evaluation, and Programming System for Infants and Children* (*AEPS*®; Brookes Publishing Co., 1993, 1996, 2002, 2022). This measure and associated curricula provide intervention personnel with a system for the comprehensive assessment of young children with results that link directly to curricular content and subsequent evaluation of child progress.

Dr. Bricker has been a primary author of the *Ages & Stages Questionnaires*® (*ASQ*®; with J. Squires; Brookes Publishing Co., 1995, 1999, 2009) and has directed research activities on the ASQ system starting in 1980. *Developmental Screening in Your Community: An Integrated Approach for Connecting Children with Services* (with M. Macy, J. Squires, & K. Marks; Brookes Publishing Co., 2013) offers a comprehensive system for creating and operating communitywide developmental-behavioral screening programs for young children.

Dr. Bricker's distinctions include the Division of Early Childhood, Council for Exceptional Children Service to the Field Award, December 1992, and the Peabody College Distinguished Alumna Award, May 1995.

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Dr. Grisham has directed research projects on topics including linking assessment and instruction, early care and education program quality, and individualizing instruction for young children with disabilities. In addition, she has conducted research on the effectiveness of instructional procedures that are embedded into developmentally appropriate activities, the application of multi-tiered systems of support in early childhood settings, and coaching teachers and caregivers to implement evidence-based instructional strategies with fidelity. Dr. Grisham is Project Director for the Kentucky Deaf-Blind Project, which provides technical assistance to families and service providers of infants, toddlers, children, and youth with deaf-blindness. She coauthored a book titled *Reach for the Stars: Planning for the Future* (with D. Haynes; American Printing House for the Blind, 2013), which is used to support families of young children in planning for their children's future and articulating their priorities to educational team members, as well as *Blended Practices for Teaching Young Children in Inclusive Settings, Second Edition* (with M. L. Hemmeter; Brookes Publishing Co., 2017), and *Assessing Young Children in Inclusive Settings: The Blended Practices Approach* (with K. Pretti-Frontczak; Brookes Publishing Co., 2011). Finally, Dr. Grisham directed the nationwide field test for AEPS-3. Dr. Grisham is frequently asked to provide professional development to state departments of education, universities, and local education agencies on topics for which she conducts research throughout the country. Dr. Grisham is co-founder of a children's home and preschool program in Guatemala City, Hope for Tomorrow, where she accompanies students for the education abroad program. Dr. Grisham also works internationally in other locations to promote inclusion of young children with disabilities.

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Dr. Johnson is Professor in Child and Family Studies at St. Cloud State University in Minnesota, where she provides professional development education in early childhood education, early intervention, and early childhood special education. She completed her undergraduate degree in special education and elementary education at the University of Idaho and her master's and doctoral degrees in early intervention at the University of Oregon under the advisement of Dr. Diane Bricker.

Dr. Johnson has worked at University Centers for Excellence in Developmental Disabilities in Louisiana, Oregon, and Nevada as Program Coordinator, Teacher, Service Coordinator, Grant and Contract Administrator, Director, Principal Investigator, and Instructor. She served as Director of the Research and Educational Planning Center and the Nevada University Center for Excellence in Developmental Disabilities from 2001 to 2008, where she developed and administered lifespan programs, services, and supports for individuals with disabilities and their families. Her professional experiences encompass all service settings for young children, including neonatal intensive care units, pediatric intensive care units, well-baby clinics, home- and center-based programs for infants and young children (including Head Start and Early Head Start), nursing homes, supported employment, transition programs, special education schools, and university lab school programs. Much of her professional career has focused on developing and refining assessment and curriculum systems to support interventions for young children with disabilities, birth to age 6, and their families. Dr. Johnson is author, developer, and trainer of *An Activity-Based Approach to Early Intervention, Fourth Edition* (with N. Rahn & D. Bricker; Brookes Publishing Co., 2015), and the *Assessment, Evaluation, and Programming System for Infants and Children* (*AEPS*; Brookes Publishing Co., 2002, 2022) and has been involved with the system since her days as a graduate student at the University of Oregon. In her spare time, Dr. Johnson likes to read, work on home projects, observe and interact with young children, and support human and animal rights.

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Dr. Macy teaches early childhood classes at the University of Nebraska at Kearney. She does research related to young children with disabilities. Dr. Macy engages in research and outreach with the Buffett Early Childhood Institute. As the Community Chair, Dr. Macy adopts an integrated approach to early childhood education and development through theory, research, and practice that links empirical research with the creation of programs, ideas, and tools for practitioners and community members. She received master's and doctoral degrees in special education from the University of Oregon with an emphasis on early intervention and early childhood special education. Her research interests include assessment of children from birth to age 8 with delays, developmental screening, play, and personnel preparation.

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Dr. Slentz began her career in early intervention and early childhood special education with home visiting and classroom teaching with infants, toddlers, and preschoolers and progressed to directing a regional home-based early intervention program in Montana. For decades, she was involved in preservice preparation of early interventionists and early childhood special educators at the University of Oregon and Western Washington University. She also provided technical assistance and program development for Part C in Washington. She is currently Professor Emeritus in the Department of Special Education at Western Washington University.

Dr. Slentz's involvement with AEPS began with the earliest versions of the system and continues today, including development, consultation, research, and training. Her particular areas of interest and expertise are assessment and evaluation, infant development, early intervention, and working within family contexts across cultures. She has been fortunate to combine her love of travel with international training and consultation opportunities in Canada, United Arab Emirates, Singapore, and Kenya.

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Misti Waddell is Senior Research Assistant/Project Coordinator at the Early Intervention Program at the University of Oregon. She used the *Assessment, Evaluation, and Programming System for Infants and Children (AEPS)* in classroom settings early in her career and, since the early 1990s, contributed to the development and research of the second edition of AEPS (2002), including project coordination for several field-initiated research and outreach training projects. Most recently, Ms. Waddell served as coordinator for the field testing of AEPS-3. Her professional activities in curriculum-based assessment also focus on the social-emotional development of young children. She coordinated the research study Project SEAM: Preventing Behavior Disorders and Improving Social Emotional Competence in Infants and Toddlers with Disabilities to examine the psychometric properties of the *Social-Emotional Assessment/Evaluation Measure, Research Edition (SEAM™)* (with J. Squires, D. Bricker, K. Funk, J. Clifford, & R. Hoselton; Brookes Publishing Co., 2014). She is currently part of the development team and serves as project coordinator for Project SELECT: Social-Emotional Learning in Early Childhood for Infants and Toddlers, a federally funded project to develop the curricular component of SEAM. Ms. Waddell provides training for early childhood teachers, interventionists, and parents in developmental and social-emotional screening, assessment, and intervention, including *AEPS, SEAM, Ages & Stages Questionnaires®, Third Edition (ASQ®-3),* and *Ages & Stages Questionnaires®: Social-Emotional, Second Edition (ASQ®:SE-2).*

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Dr. Rahn is Assistant Professor of Special Education at the University of Wisconsin–Whitewater. She completed her undergraduate degree in communicative disorders at the University of Wisconsin–Madison, her master's degree in early intervention at the University of Oregon, and her doctoral degree in special education at the University of Minnesota under the advisement of Dr. Scott McConnell. She has worked as a preschool special education teacher with children having a range of needs, including children with significant disabilities, and as an early interventionist providing services to infants and toddlers with special needs and their families. Dr. Rahn is author of *An Activity-Based Approach to Early Intervention, Fourth Edition* (with J. Johnson & D. Bricker; Brookes Publishing Co., 2015). While at the University of Oregon, she provided training on AEPS and earlier editions of *An Activity-Based Approach to Early Intervention* to programs around the country as part of an outreach training grant. Her areas of interest include naturalistic intervention strategies, early language and literacy interventions, multi-tiered systems of support, and personnel preparation. Dr. Rahn's research focuses on embedded vocabulary and language interventions for young children with disabilities and at risk for disabilities.

1

AEPS®-3 Curriculum Foundations and Framework

The AEPS-3 Curriculum is grounded in established contemporary early childhood developmental theory as well as recommended practices in early intervention and early childhood special education (EI/ECSE). The AEPS-3 Curriculum is a core component of AEPS-3 and a key part of the AEPS-3 linked system. It is specifically designed to be used as part of a multi-tiered system of support in all early childhood settings. Figure 1.1 illustrates the linked system approach that underlies AEPS-3.

As a complete system, AEPS-3 directly links the components of assessment, goal/outcome development, teaching/intervention, and progress monitoring. A linked system is one that allows practitioners to collect assessment data and use those data to develop specific developmental and academic goals, plan teaching/intervention efforts, and guide monitoring of children's progress.

AEPS-3 is such a system. Within it, the AEPS-3 Curriculum provides content for and guidance on what and how to teach individuals and groups of children (infants, toddlers, and preschoolers) who are learning at different levels and who acquire new skills and information in different ways. Throughout the AEPS-3 Curriculum, the term *children* is used to refer to the age range that includes infants, toddlers, and preschoolers. The curriculum content and procedures offer teachers, interventionists, and specialists detailed guidance about how to do the following:

- Collect initial assessment information to establish children's developmental skills and informational levels in all important areas.
- Use assessment data to make instructional/programming decisions about outcomes to teach within hierarchical sequences of developmental and content skills. Program development at this level provides a clear, appropriate scope and sequence of what to teach.
- Teach skills embedded within regularly occurring routines and activities at home and in classrooms or other environments, using a range of evidence-based practices. Specifically, intervention and instructional strategies show how to effectively teach
  - All children individually and in groups
  - Some children who need extra help
  - Few children who have specialized needs that require individual supports
- Monitor progress using the AEPS-3 Test to determine whether teaching/intervention efforts have resulted in positive outcomes for individuals and groups of children.

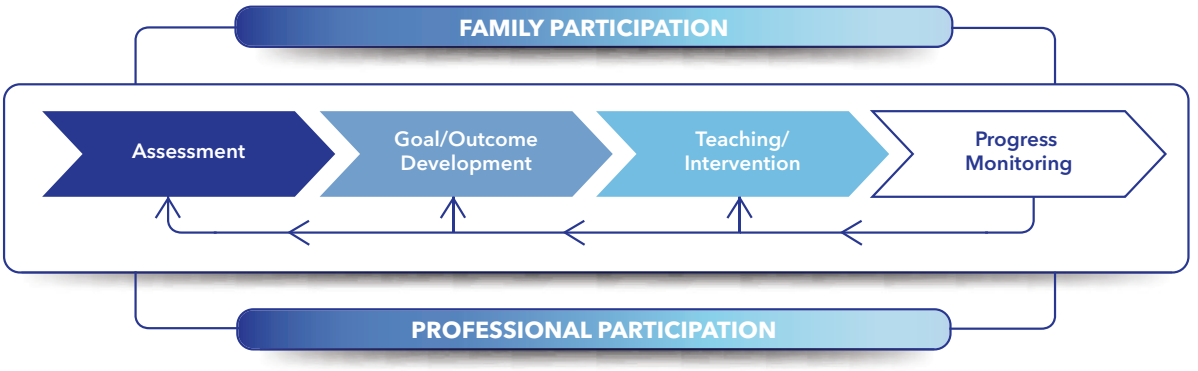

Figure 1.1. AEPS-3 Linked System Approach. This figure illustrates the conceptual framework of the AEPS-3 linked system. The arrow shapes represent the four main components of the AEPS-3 Linked System Framework: assessment, goal/outcome development, teaching/intervention, and progress monitoring. As the direction of the arrows illustrates, assessment informs goals/outcomes development, goals/outcomes development influences teaching/intervention, teaching/intervention informs progress monitoring, and progress monitoring then influences all three of the other parts. Participation of the family and professionals is essential throughout..

FOUNDATIONS

Designed for practitioners, the AEPS-3 Curriculum is based on three interrelated themes consistently found in recommended practices for infants and young children:

1. MTSS—The curriculum is organized as a *multi-tiered system of support (MTSS)* that provides specific strategies to meet the developmental needs of every child, regardless of the level of support necessary to promote effective learning.
2. Blended practices—The curriculum blends theory, strategies, and practices from early childhood education and early childhood special education (ECE/ECSE) to meet the needs of diverse groups of young children.
3. ABI—The curriculum uses *activity-based intervention (ABI)* as a strategy for providing teaching/intervention in the context of naturally occurring, developmentally appropriate routines and activities.

Each of these practices can support practitioners who serve infants and young children in home and classroom settings. The next section explains them in more detail.

1. Multi-tiered System of Support

The AEPS-3 Curriculum is designed to address the need for a continuum of differentiated strategies to effectively serve diverse groups of young children. Although MTSS has been around for some time as a means of offering different levels or intensities of teaching/intervention support, the notion of MTSS in early childhood emerged from discussions about how to apply response to intervention (RTI) in early childhood programs.

In 2019, the Division of Early Childhood (DEC) developed a position paper to address issues associated with MTSS in early childhood. As defined in the paper, MTSS "is a system-wide framework for delivering effective and efficient educational services and supports, matched to the needs of all learners for acquisition of essential skills, knowledge and dispositions, resulting in improved learner performance across one or more settings" (DEC, in press, p. XX).

According to Carta and Miller Young (2019), the following principles characterize early childhood MTSS:

1. All children can learn and achieve when they are provided with high-quality services and supports to match their needs.
2. Instruction should focus on academic, social-emotional, and behavioral goals.
3. Children showing signs of delay should be identified as early as possible and provided with a level of instructional intensity to match their needs.

4. Interventions to address children's needs should be designed by collaborative teams that include parents, administrators, teachers, and other instructional staff. These interventions should be guided by student data and informed by evidence-based practices.
5. Children's responses to intervention should be monitored continuously, and explicit data-based decision rules should be in place for making adjustments in intervention.
6. All intervention should be based on evidence-based practice implemented with fidelity.

The AEPS-3 Curriculum is designed to meet the definition of an MTSS that helps teams differentiate approaches or levels of support for young children with diverse needs. Other widely known MTSS approaches include the Pyramid Model (Hemmeter et al., 2016), Recognition and Response (Coleman et al., 2006), and Building Blocks (Sandall et al., 2019).

2. Blended Practices

The term *blended practices* refers to "the integration of practices that can be used to address the needs of all children in inclusive settings" (Grisham-Brown & Hemmeter, 2017, p. 7). Practices that blend theories, strategies, and supports from general and special education are essential to effectively addressing the increasing diversity in contemporary early childhood settings. The AEPS-3 Curriculum draws from traditional child development theories such as Piaget's (1955) cognitive developmental theory and Bronfenbrenner's (1994) ecological systems theory, as well as behavioral principles such as Skinner's (1953) theory of behavior, that serve as the foundation for effective teaching/intervention practices in special education.

The AEPS-3 Curriculum draws on the work of Grisham-Brown and Hemmeter (2017), who proposed a curriculum framework based on identifying appropriate outcomes for all, some, and individual children. Goals/outcomes at each curriculum level are matched with detailed teaching/intervention strategies that provide increasing support:

- Universal strategies appropriate for teaching all children
- Focused strategies for targeted instructional outcomes
- Specialized strategies for children who require individualized support

The curriculum framework suggests a set of practices that serves as the foundation in any early childhood setting for helping children acquire common outcomes such as early learning standards—practices that rely on positive interactions between children and adults, a well-organized learning environment, and young children's hands-on learning.

3. Activity-Based Intervention

The AEPS-3 Curriculum includes an emphasis on delivering intervention/instruction that is derived largely from the four basic elements of ABI (Johnson et al., 2015):

1. ABI makes use of three types of activities:
    - Child-initiated activities, such as learning centers and free play
    - Regularly occurring routines, such as meals and transitions
    - Small-group activities that adults plan and guide, such as storytime
2. ABI encourages multiple and varied learning opportunities so that teaching occurs with sufficient frequency and across a variety of people and materials to support generalization of skills.
3. Functional and generative goals increase children's independence and allow them to use a variety of responses across settings.
4. ABI uses consequences that are natural or logical to the task to provide immediate and relevant feedback as children learn new skills.

Table 1.1. Evidence-based practices and skill areas

Evidence-based practice	Skill area(s) aligned with practice
Differential reinforcement	Play, engagement, and appropriate behavior
Correspondence training	Engagement, play, academic skills, and health/safety skills
High-probability requests	Request-following, social skills, and communication skills
Modeling, mand-modeling, incidental teaching, and naturalistic time delay (milieu teaching)	Requesting, choice making, saying/signing single/multiple words, play expansions, and responding to questions
Graduated guidance	Safety skills, feeding self, and dressing
System of least prompts	Play skills and dressing
Constant time delay Progressive time delay	Play skills, academic skills (counting, reading), prewriting, engagement, peer imitation, and communication skills
Simultaneous prompting	Play skills and home skills
Peer-mediated instruction	Social skills

Other Evidence-Based Practices (EBP)

The AEPS-3 Curriculum incorporates a variety of evidence-based teaching/intervention practices in ECE/ECSE, defined as "practices and programs shown by high-quality research to have meaningful effects on student outcomes" (Cook & Odom, 2013, p. 135). The AEPS-3 Curriculum uses principles and research-based strategies associated with such evidence-based practices as embedded instruction, *data-driven decision making,* and specific systematic instruction, each of which is addressed in the paragraphs that follow. Table 1.1 lists the strategies identified throughout the AEPS-3 Curriculum along with the skills that are best aligned with each strategy.

Embedded Instruction. Embedded instruction occurs when a child is engaged in preferred activities and an adult intentionally uses that activity as an opportunity to practice or demonstrate a target skill by expanding, modifying, or taking a logical next step with the skill. The activity itself provides feedback based on the child's response. Embedded instruction, which is an underlying process of ABI, has been shown repeatedly to be an effective method for helping infants and young children with and without disabilities acquire or expand skills. Embedded instruction has been used successfully to teach preacademic, social, communication, motor, adaptive, and cognitive skills to young children. The AEPS-3 Curriculum embeds all AEPS-3 Test items in commonly occurring routines and activities that take place at home or in center-based environments such as child care and pre-K classrooms.

Data-Driven Decision Making. Data on individual children's performance levels are the best source of information for selecting appropriate teaching/intervention goals and effective teaching strategies matched to support needs. AEPS-3 is structured to provide evidence to guide decision making at each step in the linked system. Observing young children as they engage in daily activities yields a vast amount of information about what a child knows and is able to do over time. The AEPS-3 Test provides precise performance data to inform decisions about the most appropriate goals and objectives for each child. Likewise, data collected during teaching/intervention reveal information that is critical for adjusting outcomes and modifying teaching strategies. Progress monitoring data also provide updates to the assessment data from the test, forming a comprehensive profile of skills acquired across all areas of development.

Specific Systematic Instruction. The teaching strategies in the AEPS-3 Curriculum were selected because evidence demonstrates that they result in positive outcomes for young children who have disabilities or are at risk. Emerging evidence also indicates that some strategies (such as peer-mediated instruction and system of least prompts) are effective in teaching high-priority skills to children without disabilities.

CURRICULUM FRAMEWORK

The AEPS-3 Curriculum is designed intentionally to coordinate and integrate recommended practices and evidence-based research into a coherent, easy-to-use framework by suggesting differentiated instruction similar to an MTSS model, using evidence-based practices from both ECE and ECSE, and embedding those practices into home and classroom routines and activities. The sections that follow provide details about the curriculum's central elements and characteristics.

Inclusive of All Children From Birth to 6 Years, With and Without Disabilities

The AEPS-3 Curriculum makes it possible to teach critical early skills to all children. It should be useful for individual children in Early Head Start, children in Part C Early Intervention home settings, and groups of young children in preschool classrooms (blended, inclusive, or self-contained), including those with developmental and early academic problems who have not yet been formally identified for special services.

Based in Routines and Activities

The AEPS-3 Curriculum focuses on teaching during regularly occurring routines and activities at home and in the classroom. The curriculum is organized into 18 routines and activities (see Box 1.1 for a complete list) and emphasizes play and young children's successful participation in homes and classrooms. Practitioners use evidence-based strategies to teach specific developmental skills without removing young children from their daily routines and ongoing interactions with peers and family members.

Active & Outdoor Play	Field Trips
Arrival & Departure	Math
Art	Meals & Snacks
Bath Time	Music & Movement
Blocks	Nap & Sleep
Circle Time	Science (in Growing and Ready levels)
Diapering, Toileting, & Handwashing	Sensory
Dramatic Play	Technology (in Growing and Ready levels)
Dressing	Writing

Box 1.1 AEPS-3 Curriculum Routines and Activities

Organized Around Three Skill Ranges—Beginning, Growing, and Ready

In the curriculum, AEPS-3 items are grouped into three levels, making it possible to teach infants and young children developmental skills that are embedded in a consistent set of daily routines and activities. In early development, the times at which specific skills emerge differ from child to child, and some skill areas may develop more quickly than others for any given child.

The AEPS-3 Curriculum includes one complete volume for each skill level. Taken together, the three curriculum volumes provide comprehensive strategies for teaching developmental skills in each of the eight AEPS-3 areas to children who function developmentally between the ages of birth and 6 years.

- The Beginning level (Volume 3) includes foundational skills that typically developing children acquire in the first year to 18 months of life.
- The Growing level (Volume 4) generally covers those skills that require children to combine and apply earlier skills. These skills typically appear during the toddler years, from 18 months to 3 years of age.
- The Ready level (Volume 5) has more complex developmental and early academic skills that are typical of preschool-age children and considered important for success in school.

Tiered for Differentiated Teaching

The AEPS-3 Curriculum is arranged in differing tiers of support to help match teaching strategies to children's support needs. A central feature of the curriculum, this tiered model accommodates the varying rates at which young children learn skills in different developmental areas. This

three-tiered model provides increasingly intensive intervention/instruction to help ensure the level of support needed for each child to participate successfully at home, in classrooms, and in community settings.

Each of the curriculum's three tiers of support—universal, focused, and specialized—contains a variety of suggestions for specific teaching strategies that are appropriate for children with and without disabilities. Figure 1.2 shows the tiered model of the AEPS-3 Curriculum framework in more detail, indicating for whom that tier's strategies are intended, the types of strategies the tier includes, and the frequency of data collection. As the figure shows, data collection occurs least frequently in Tier 1, more frequently in Tier 2, and most frequently in Tier 3. Refer to Figure 1.2 in the discussion that follows. The teaching strategies in Tier 1 are for all young children in high-quality early childhood learning environments. The teaching strategies in Tier 2 are for some children who need extra help, and those in Tier 3 are for the few children who need individual help.

Tier 1: Universal Support

The support strategies in Tier 1 reflect best practices in caregiving and teaching. They are designed to provide safe, healthy learning environments and high-quality, developmentally appropriate curriculum for ALL young children. Within the universal support tier, developmental skills constitute core curriculum content for infants and young children. Daily routines and activities provide meaningful teaching and learning contexts for every young child with or without disabilities. Each of the curriculum's routines and activities lists suggestions for the following:

- Arranging daily routines and activities
- Facilitating appropriate, positive social interactions
- Selecting materials

Universal strategies may not work well for every child, and some children may need alternatives that require more input and structure to learn specific skills.

Tier 2: Focused Support

The strategies within Tier 2 build on the routines and activities of the universal tier and involve relatively minor modifications and adaptations for SOME children who need extra help to ensure more frequent and focused learning opportunities. The AEPS-3 Curriculum offers a range of specific strategies for the following:

- Identifying targeted outcomes
- Adapting and modifying routines, activities, and environments

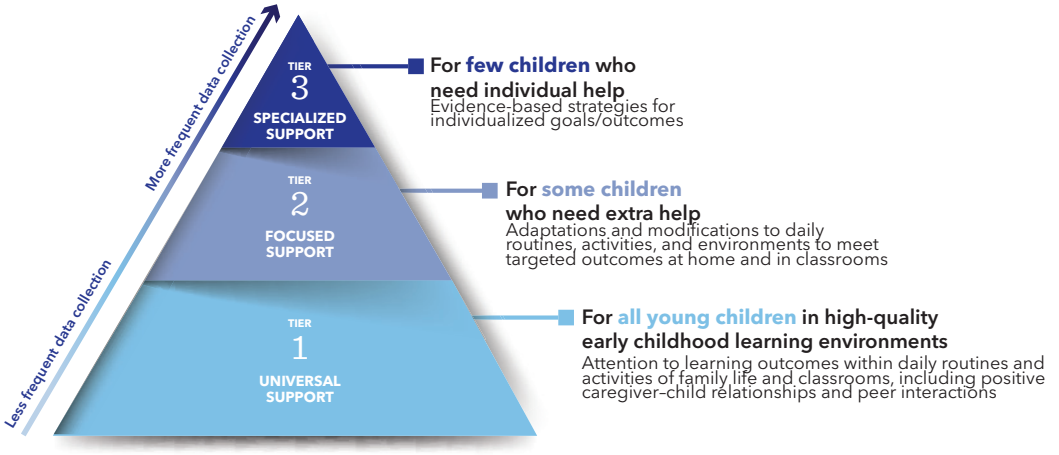

Figure 1.2. Tiered Model of the AEPS-3 Curriculum Framework. This illustration depicts the three tiers of the AEPS-3 Curriculum (universal, focused, and specialized teaching strategies), indicates for whom the strategies are intended, and briefly describes the types of strategies included at that tier. Data are collected with increasing frequency the higher the tier.

- Incorporating child preferences, family priorities, and peer supports
- Selecting specialized materials
- Modifying teacher prompts

Tier 3: Specialized Support Tier 3's specialized support strategies are for the FEW individual children who need intensive supports to address their unique learning goals, such as those found on IFSPs and IEPs. Specialized strategies build upon, rather than replace, universal and focused levels of teaching. Strategies at the specialized tier are individualized to help children acquire prerequisite and foundational skills more quickly and thus increase their participation in high-priority routines and activities. Specialized strategies emphasize the following:

- Suggestions for selecting high-priority skills to teach that emphasize positive caregiver–child relationships and promote peer interactions
- Specific individualized prompts and cues
- Materials and interactions that are specific to children with a variety of identified disabilities

Designed for Continuous Monitoring and Evidence-Based Decision Making

Monitoring children's progress is a central element of the AEPS-3 Curriculum, especially as they learn new skills. Monitoring children's progress is important for both teachers and parents and provides the necessary basis for making teaching decisions. Chapter 5 in this volume provides specific directions for matching how often to collect progress monitoring data with the level of teaching/intervention support provided (with data collected more often as the support level increases). The AEPS-3 Test's scoring system and organization are designed to allow you to monitor and track progress with precision as new skills emerge and children master them.

Data that show children's progress (or lack thereof) are essential for determining the level of support children need to learn new skills. For efficiency's sake, it is important to move to new outcomes as soon as children master skills. Likewise, when progress monitoring data indicate progress is not occurring or is slower than desired, it is necessary to modify outcomes and/or teaching strategies. In the AEPS-3 linked system, assessment data are used to make decisions about selecting learning outcomes and goals for individual children, and progress monitoring data are used to move to new outcomes and goals and different teaching/intervention strategies.

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Math

Math is an important element in many children's daily routines. At the Ready level, it includes counting, comparing quantities using sets, reading and writing numbers, and using early addition and subtraction. Acquiring early math skills is essential in building a strong foundation for school readiness. Math can be embedded in any routine or activity, at any time, in any environment, multiple times a day. Peer and adult guidance and modeling may be needed to help children relate their daily experiences to math. This routine changes over time as children develop fine motor, cognitive, and social-communication skills. The AEPS-3 Ready level of Math uses skills from eight developmental areas.

Concurrent Skills

The following concurrent skills are AEPS-3 skills that can be easily embedded and taught during regular occurrences of Math.

FINE MOTOR Ready Skills

C 1 Holds writing tool using three-finger grasp to write or draw

Embedded Learning Opportunities

- *Writes numbers*

GROSS MOTOR Ready Skills

B 7.2 Hops forward on one foot

C 1.1 Bounces ball with one hand

C 2.1 Moves swing back and forth

Embedded Learning Opportunities

- *Counts number of times hops on one foot, bounces ball, or swings back and forth*

ADAPTIVE Ready Skills

D 2 Complies with common home and community safety rules

Embedded Learning Opportunities

- *Does not put math manipulatives in mouth*

SOCIAL-EMOTIONAL Ready Skills

- **B 3.1** Explains or shows others how to do tasks mastered
- **C 4** Maintains engagement in games with rules
- **C 4.1** Knows and follows game rules
- **C 4.2** Participates in game
- **E 1** Meets observable physical needs in socially appropriate ways

Embedded Learning Opportunities

- *Participates in and shows others how to play math games ("I have . . .," "Who has . . . ?" dice games)*
- *Goes to bathroom in classroom when necessary*

SOCIAL-COMMUNICATION Ready Skills

- **B 4** Responds to comprehension questions related to *why*, *how*, and *when*
- **C 2** Uses plural pronouns to indicate subjects, objects, and possession in multiple-word sentences
- **C 3.1** Uses irregular past tense of common verbs
- **C 4** Asks questions using inverted auxiliary
- **D 3** Uses conversational rules when communicating with others
- **D 3.1** Uses socially appropriate physical orientation
- **D 3.3** Responds to topic initiations from others

Embedded Learning Opportunities

- *Says "Four" when adult asks "How many children are here?"*
- *Tells adult "We used all of the measuring sticks to see how tall Stan is"*
- *Says "Can we take a picture of our work?"*
- *Takes turns listening to peers discuss a math problem*

COGNITIVE Ready Skills

- **C 4** Uses early conceptual comparisons
- **D 3** Solves problems using multiple strategies
- **E 4** Transfers knowledge
- **E 4.1** Communicates results of investigations

Embedded Learning Opportunities

- *Indicates that one set of counting linking cubes is taller than another*
- *Identifies how many in all by using different strategies such as counting on, counting all, or using shortcut sum strategy (counts 6 blocks in one tower, and when asked "How many blocks did we use to make both towers?" counts on from 6 to determine there are 14 blocks in total)*
- *Causes weight to increase by adding manipulatives to a scale*

LITERACY Ready Skills

- **A 3** Recognizes print words for common or familiar people, objects, or pictures
- **C 2.2** Reads frequently occurring sight words
- **E 3** Writes words using conventional spelling
- **E 3.1** Writes using developmental spelling

Embedded Learning Opportunities

- *Recognizes and writes number words*

MATH Ready Skills

A 2 Counts out 10 items
A 2.1 Counts 10 items to determine "How many?"
A 2.2 Recites numbers 1–10
A 3 Counts out 20 items
A 3.1 Counts 20 items to determine "How many?"
A 3.2 Recites numbers 1–20
A 4 Skip counts by tens to 100
A 4.1 Recites numbers 31–100
A 4.2 Recites numbers 1–30
B 2 Compares items in sets of 6 to 10 by counting
B 2.1 Compares items in sets of 6 to 10 by matching
B 2.2 Creates equivalent sets of 10 items
B 3 Compares items in sets of 11 to 20 by counting
B 3.1 Compares items in sets of 11 to 20 by matching
B 3.2 Compares items in sets of 11 to 20 by visual examination
C 1 Reads and writes numerals for quantities to 5
C 1.1 Demonstrates understanding of mathematical meaning of written numerals *1–5*
C 1.2 Labels numerals *1–5*
C 2 Reads and writes numerals for quantities 6–10
C 2.1 Demonstrates understanding of mathematical meaning of written numerals *6–10*
C 2.2 Labels numerals *6–10*
C 3 Reads and writes numerals for quantities 11–20
C 3.1 Demonstrates understanding of mathematical meaning of written numerals *11–20*
C 3.2 Labels numerals *11–20*
D 1 Reads and writes symbols for addition (+) and equals (=)
D 1.1 Solves picture or object addition problems using shortcut sum strategy
D 1.2 Counts forward to 10
D 1.3 Solves picture or object problems using count all strategy
D 1.4 Says number after 1–10
D 1.5 Demonstrates understanding of concept of addition
D 2 Reads and writes symbols for subtraction (−) and equals (=)
D 2.1 Solves picture or object subtraction problems with set of 10 or less
D 2.2 Says number before 2–10
D 2.3 Demonstrates understanding of concept of subtraction

Embedded Learning Opportunities

- *Counts out manipulatives at the math center, kids on the carpet, goldfish at snack*
- *Rote or skip counts with teacher while at the math center, on number line, and at circle time*
- *Counts and compares answers on the question-of-the-day board (number of goldfish at snack, blocks in towers)*
- *Creates equivalent sets of materials to ensure each child has the same amount*
- *Writes numbers to indicate how many (writes number 9 after counting out 9 pompoms, writes 14 after counting 14 friends at school)*
- *Adds two groups of items by counting on, counting all, or using shortcut sum strategy (counts 6 blocks in one tower, and when asked "How many blocks did we use to make both towers?" counts on from 6 to determine there are 14 blocks in total)*
- *Talks about less and take away using concepts of subtraction (counts 8 stickers, then gives one to a friend and says "I have 7 stickers now")*

TIER 1

UNIVERSAL STRATEGIES

These are best practices for ALL young children, with attention to meeting learning outcomes within daily routines and activities of family life and early childhood classrooms while promoting positive adult–child relationships and peer interactions.

Math is a vital component of kindergarten readiness and is useful in many daily routines and play by the time children are in preschool. Preschoolers and children who are at a more complex level of development display conceptual math skills by counting, sorting, making patterns, and sequencing. Children at the Ready level of Math generally have communication and language skills that allow them to investigate math concepts using words and print depictions. Refined gross and fine motor skills allow preschoolers to coordinate and position their bodies with increasing accuracy and manipulate small objects to match, sort, and create sets of small objects. Early writing also begins to emerge, and children can begin to explore writing numbers and drawing shapes. Preschool learning is marked by children's expanded use of tools such as writing implements, rulers, and other measuring devices that involve numbers.

Even basic preschool math tasks, such as accurately counting out objects, require complex conceptual knowledge across developmental areas:

- Understanding of common quantity concepts
- Discrimination based on perceptions or evidence
- Sequencing of events or objects
- Working memory
- Physical dexterity needed to point accurately and manipulate items

Younger preschoolers may still be learning some of the skills related to math, and the children in any preschool classroom are likely to show a wide range of development in math skills. Creating open-ended math activities and embedding math into daily routines helps build the math interest and skills of all children across a range of skill levels.

Interactions

Language is an important tool for framing children's learning and understanding of math concepts in daily life. Engaging children in daily math explorations in the context of their lives supports stronger connections to math concepts and more meaningful understanding and practice of new skills. Following are some suggested interactions for the Ready level of this routine:

- Continue to embed increasingly sophisticated math learning into the classroom schedule:
  - Count aloud to 20 while washing hands (the number of seconds children are encouraged to wash with soap).
  - Post a number line on the wall beside the sink to encourage children who can read numbers to count while washing hands.
  - Assign tasks that involve counting to classroom helpers (counting out 15 plates for snack time, helping an adult take attendance in the morning by writing down who is present and who is absent).
- Use math talk throughout the day to capitalize on teachable moments and expand learning:
  - Say during free play time in the blocks center, "Wow, that's a big tower! I bet it's more than 15 blocks tall. Should we count and check?"

- Comment during snack time, "Look at how fast Matthew is eating his crackers—he only has 2 left. How many are on your plate, Lisa? Is that more than Matthew has? Or fewer?"

- Make dedicated math activities available each day in a math center, as a table activity, or as embedded parts of the daily schedule.
- Plan activities throughout the curriculum that can be intentionally extended to include math. Activities such as the suggestions that follow support a range of math learning and encourage children to explore such skills as estimation, measuring, ordering or sequencing, and numeracy, many of which are prerequisites to more complex skills that continue to develop as children move into kindergarten and beyond:
  - Plan activities for All About Me week that include math, such as having children trace each other's outlines on paper and then use rulers to measure the height of their paper bodies.
  - Have children color or decorate their paper bodies to match themselves and then make graphs to compare their hair color, eye color, or shoe size.
  - Have children build a fort using recycled boxes, then ask the class to guess how many children will fit into the fort and test the guesses.

Environment and Materials

Following are some suggestions to help structure the classroom's environment so that it is intentionally rich in opportunities for math learning:

- Anchor preschool math experiences with multiple collections of small animals, people, vehicles, and colored plastic blocks.
- Use number lines, number cards with pictures and numerals, and dice to encourage complex exploration and learning.
- Trim down an egg carton so it has 5 sets of 2 egg indentations (10 indentations total) to make a 10 frame that can be used for comparing up to 5 equal sets.
- Let children count by using number cards showing 5 pictures (5 tiny cubes, 5 puppets on fingers). This helps children understand that an amount is the same no matter what item is being counted.
- Use number lines to teach children how to count forward from a particular number rather than starting at 1 each time. This helps children understand that the "number after" each number equals 1 more.
- Place number-rich items in the dramatic play area (ice cube trays of different sizes, telephones, toy clocks, cash registers, play money, menus, calendars).
- Provide play pennies for preschoolers to use to buy pretend snacks and bus tickets that cost a specific number of pennies.
- Include books in the library center that feature counting, numbers, and other math concepts.
- Use story extender activities after reading math books to encourage children to take their math learning beyond the story and set the stage for inquiry and discovery (add lots of hats to the dramatic play area after reading a book about hats for sale so children can incorporate math learning into their play).
- Use puzzles, sorting toys, and other manipulatives to support math learning.
- Use recyclables in the classroom as an inexpensive, dynamic way to provide opportunities for children to explore and investigate (let children use different-size cardboard boxes to arrange in order from smallest to largest, sort objects into, and the like).

TIER 2

FOCUSED STRATEGIES

These strategies are for teaching SOME children who are struggling with a component of a skill or whose development is stalled and who need extra help to catch up or keep up. The strategies include a variety of minor adaptations or modifications to daily routines, activities, and environments to meet targeted outcomes at home and in classrooms.

- Offer manipulatives or counting sets in colors or characters that are meaningful to children to pique their interest.
- When writing numerals and solving math problems, offer children a variety of writing options (white board, paper, chalk, clipboard, notebook):
  - Use picture and numeral flashcards to target specific skills for children who are struggling.
  - Use constant time delay with flashcards:
    - Show the flashcard.
    - Wait 3 seconds for the child to respond.
    - If the child does not respond or responds incorrectly, give them the answer and have them repeat.
  - Partner a child who needs extra help with a child who has mastered or is knowledgeable about the math skills and activities being used.
- Modify the child's learning goal. Instead of focusing on teaching a child to count to 10, begin by having the child count to 3 or 5.
- Let children who are struggling work in a quiet, nondistracting space such as the library corner, or wait until outdoors time and bring a small group into the empty classroom for a quiet learning opportunity.
- Use different grouping strategies to facilitate learning:
  - Group children by skill level and create activities that target specific learning.
  - Try grouping children with more proficient peers to encourage peer modeling and shared learning.
- Make sure math learning occurs at times of day when children can be successful, such as early in the day or immediately after lunch or nap.
- Create individual workspaces using box lids or trays so children do not have to worry about space and so distractions and confusion with other children's materials can be avoided.
- Teach children who cannot speak to use simple signs (MORE, ALL DONE) so they can communicate their preferences.
- Learn to recognize children's cues and preferences.
- Pair sign language with spoken words for children who are nonverbal or who have hearing impairments.

TIER 3

SPECIALIZED STRATEGIES

These strategies for teaching the FEW children who need intensive supports include a variety of specialized, individualized, precise evidence-based strategies to meet children's unique goals/outcomes:

- Use hand-under-hand guidance to help children who have vision impairments point to or manipulate small objects.

- Outline numbers in the environment with wiki sticks or other materials, and incorporate braille usage for children who are blind.
- Make sure children are positioned appropriately with proper supports and equipment.
- For children who have spasticity that is difficult to control,
  - Try fixing materials to be counted to a surface and allowing the child to touch or gesture for counting activities.
  - Use larger items that are easier to handle when a child is struggling.
- Identify priority skills, and focus learning goals on one or two skills (if a child needs individual attention and intervention to support learning for objective C 1, Reads and writes numerals for quantities to 5, a priority skill could be reading numerals 1, 2, and 3 in different activities throughout the day).
- Modify toys for easier grasping and manipulation if necessary.
- Provide manipulatives that are designed for easy grasping (larger or smaller size than usual, with a built-up handle).

AEPS-3 Curriculum Resources (Appendix A)

Appendix A in this volume contains numerous additional resources to supplement the AEPS-3 Curriculum. The first part of the appendix presents a list of general curriculum resources, and the second part provides lists of supplementary resources for each individual routine and activity.

AEPS-3 Skills Matrix (Appendix B)

The AEPS-3 Skills Matrix in Appendix B of this volume spotlights individual skills by showing functional application across all routines and activities. Each skills matrix (there are eight total, one for each of the test's eight developmental areas) allows you to select individual AEPS-3 items for children who require an intensive focus on a few skills across routines and activities. For children who have difficulty learning new skills at the level of individual AEPS-3 items, the Foundation Steps (*FS*) provide an even more granular breakdown of component subskills that are either a sequence of developmental precursors or steps in task analyses.

VOLUME 5 Curriculum *Ready*

For use after the **AEPS®-3 Test,** this activity-based, multitiered curriculum helps professionals support every child's development with differentiated instruction in eight developmental areas: Fine Motor, Gross Motor, Adaptive, Social-Emotional, Social-Communication, Cognitive, Literacy, and Math. The **AEPS®-3 Curriculum** is divided into three levels—*Beginning, Growing,* and *Ready*—so that children with different developmental needs can participate in the same activity or routine. This Ready curriculum volume covers more complex developmental and early academic skills that are considered important for school success.

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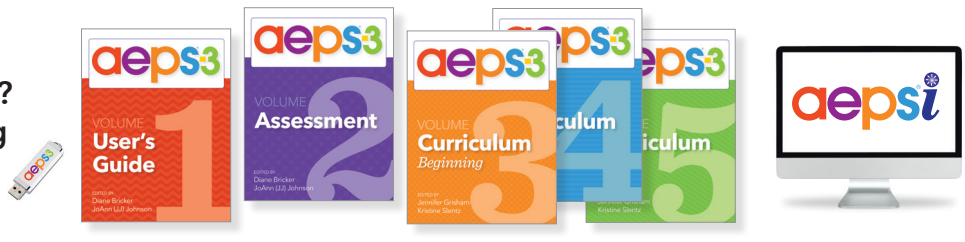

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