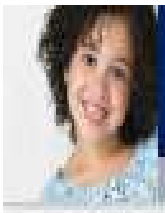

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Improving Teaching through Systematic Assessment: Early Learning Scale

GUIDEBOOK

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Dr. Kimberly Brenneman is an assistant research professor at the National Institute for Early Education Research (NIEER) and the Rutgers Center for Cognitive Science. Dr. Brenneman's research and publications focus on early science and math learning and supports for these in preschool classrooms. Her work at NIEER involves the development and validation of assessments of instructional quality and learning, as well as the design of professional development resources to improve teaching in science and mathematics. Current initiatives include a project to design and pilot test an innovative preschool professional development approach that integrates high-quality math and science instructional offerings with supports for dual language learners. Dr. Brenneman is an author of *Preschool Pathways to Science (PrePS): Facilitating Scientific Ways of Thinking, Talking, Doing, and Understanding* and serves as an educational advisor for *Sid the Science Kid*, a PBS television series and website that promote exploration, discovery, and science readiness among young children. Dr. Brenneman received her doctorate in developmental psychology from the University of California, Los Angeles.

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Forward

In these days of emphasis on standards and accountability, it is critical that we have high-quality assessment tools that can support us in our work with children. The Early Learning Scale (ELS) not only provides an excellent way to assess young children, it also has the potential to improve teaching and learning.

The ELS has been developed by researchers with years of experience in the field who understand the demands and possibilities of the daily life in programs. The assessment they have constructed provides a developmentally appropriate way to assess children's progress toward meeting preschool content standards/early learning guidelines. The scale uses performance-based assessment, allowing teachers to observe their children in the context of their daily activities. Based on extensive research in the field, the ELS addresses concepts that are important to children's present and future development and learning. These essential items on the scale can help to improve the quality of the educational experiences teachers provide as they work to offer opportunities for students to demonstrate their skills and understandings in areas such as oral language, numerical operations, measurement, observation, classification, scientific inquiry, self-regulation, and play.

The scale walks teachers through the process of carefully observing their children, documenting with anecdotes and work samples, and reflecting on what they find. The ELS helps teachers collect rich data that they can analyze to provide an accurate evaluation of where children are functioning. They can then use this information to plan for meaningful instruction for each child. In this way the instruction and assessment truly are interrelated and connected, as they optimally should be to help children learn. Because the authors of the scale have chosen items that develop on a continuum, the ELS is a wonderful guide for individualized teaching. Once a teacher knows where a child is performing on the ELS, the scale informs the teacher on how to scaffold the child's learning by providing the next step in the continuum.

The Guidebook that accompanies the ELS provides a wealth of information, including background research, descriptions of how to use the system, and illustrative examples. Clear descriptions of what teachers might see at each level of the continuum help teachers determine children's current development. The Guidebook makes the connections between the items on the scale and the standards children are expected to meet, along with teaching ideas to help children reach the standards. The Guidebook contains helpful forms that help teachers document children's individual progress. There are also forms to keep track of all members of the group, which will help teachers see what skills and concepts all the children might benefit from spending more time on.

True collaborative partnerships with parents extend the learning potential for our children. The ELS gives teachers a helpful, understandable communication tool to share with parents. Teachers and parents can discuss what children are currently doing and then collaborate on ways to help children progress to higher levels on each of the items.

The ELS is a significant contribution to the field, joining very few other assessments that are truly developmentally appropriate and research-based. This tool allows teachers to observe

children over time, providing a true picture of their abilities. The 10 major items of the scale help teachers to organize their assessment, making it manageable and useable. The ELS gives an accurate picture of where children are in their progress toward meeting standards and can increase the quality of the programs we offer in these important years in the educational life of our children.

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System Description

Rationale

One of the primary purposes of early childhood assessment is to guide instructional decisions, and this should be a component of a high-quality early childhood program (National Association for the Education of Young Children [NAEYC] and National Association of Early Childhood Specialists in State Departments of Education, 2009). Ongoing assessment requires gathering information about children from several forms of evidence (an outward sign or indication of the child's development or learning), then organizing and interpreting that information (McAffee, Leong, & Bodrova, 2004). Performance-based assessments are important for young children in particular because children often do not perform consistently from situation to situation and day to day. Performance assessments are able to capture children's skills and knowledge in real experiences over time. This type of assessment system compares children to themselves and focuses on strengths and interests. The data can be used to inform teaching and can be easily used to communicate with parents or caregivers in a meaningful way about a child's growth and development during the preschool years. Additionally, the data for individual children can be aggregated to examine the needs of a program or center as a whole (National Research Council [NRC], 2008). Professional development interventions, materials, or other supports can then be put into place based on these findings.

Development

The authors at the National Institute for Early Education Research (NIEER) developed the Early Learning Scale (ELS), an observation-based performance assessment, in response to a request by educators for a comprehensive, standards-based assessment system capable of informing instruction and making a direct impact on teaching and learning. Teachers use the ELS as a formative, ongoing assessment tool in their classrooms.

The ELS is designed for teachers to systematically assess preschool children's progress toward learning standards such as the Head Start Child Development and Early Learning Framework and state learning expectations. The ELS is a concise, performance-based measure that uses student data collected through observation and work samples. Data are analyzed using research-based benchmarks, and children are assigned a score on the five-point continuum for each of the ten included items. This provides the teacher with valuable data to inform instruction and improve student learning across domains. In addition, since the ELS is based on state learning standards and current research and is not curriculum specific, the system can be used in any preschool classroom.

The Instrument

The ELS examines three domains: Math/Science, Social-Emotional/Social Studies, and Language and Literacy. The content included in these domains meets the following criteria: it is measurable, develops on a continuum, and is critical to present and future learning.

Specific science content was not included in the instrument because content topics vary widely from classroom to classroom, and there is not an established consensus of content specific to preschool. It is also difficult to place specific content knowledge onto a continuum. However, the scientific inquiry process was included in the instrument because it can be evaluated through any content and is used as the vehicle to learn scientific content knowledge.

The ELS includes the arts and physical development in the collection of data and evidence for children, but it does not score on a continuum for these domains. Often at the preschool level, standards indicate that children should begin to explore and develop an appreciation for the arts. This is something that is difficult to observe and not appropriate to place on a continuum. Additionally, physical development is usually best assessed through direct testing using a checklist rather than a continuum. These domains are included in the guidebook because it is important for teachers to document development and intervene specifically when concerns arise. However, the domains are not scored on the instrument.

The three domains that are scored on the ELS are divided into ten items and further delineated into strands for more focused observation. The ELS provides a five-point continuum that is supported by indicators at levels 1, 3, and 5. (See chart on page 8.) Listed below are the domains and items that comprise the ELS.

- Domain: Math/Science
  - Item 1: Number and Numerical Operations
  - Item 2: Classification and Algebraic Thinking
  - Item 3: Geometry and Measurement
  - Item 4: Scientific Inquiry
- Domain: Social-Emotional/Social Studies
  - Item 5: Self-Regulation
  - Item 6: Play
- Domain: Language and Literacy
  - Item 7: Oral Language
  - Item 8: Phonological Awareness
  - Item 9: Print Awareness
  - Item 10: Writing

Special Populations

English Language Learners

In the ELS system, collecting documentation and assessing English language learners is determined to a large extent on the language of instruction and the purpose of the assessment. If the teachers in the classroom do not speak the home language of the child, then knowing more about the child's ability in the home language has limited utility for instruction. If the language of instruction is English, then it may be appropriate to use only English assessments. The research is unclear on how much transference emergent bilinguals make between languages. If the teachers are trying to determine what a child understands conceptually, then gathering data across languages can be useful and English-only teachers may ask parents for information to add to their documentation. For example, some young English language learners may make observations or ask questions in their home language while at home with family, but they do not yet feel comfortable doing so in English while at school.

Professionals involved in the assessment of young English language learners should seek information and insight from family members in selecting, conducting, and interpreting assessments (NAEYC, 2009). Whenever feasible, assessment should be conducted in the language of instruction. So, if the child is in a dual-language classroom, bilingual documentation should be collected to accurately represent what the child knows and thus indicate what the focus of teaching should be in either language.

Children with Disabilities

Assessment systems such as the ELS can be the best method of assessing the instructional needs of children with disabilities since they measure children's abilities in context and over time. The ELS instrument can also provide excellent information for developing Individualized Educational Plan objectives. However, if a child with disabilities is not yet at a developmental level that is included on the ELS, the indicators themselves are not as useful. If the child's abilities are below those of the indicators at level 1, then teachers should continue to collect documentation through the observational method of the ELS but may want to refer to other developmental trajectories to determine what the next benchmark should be in particular content areas. If the child's abilities are not represented in any of the item indicators of the ELS, then the teacher or program may need to choose a specialized assessment system for that child. If for some reason an ELS score is required for every child, then a score of 1 is appropriate. However, we caution that this does not provide the same information to the teacher about the sequence of development and other information should be referenced.

Advanced Children

Children who demonstrate advanced skills and score at or above the ELS scale should continue to be challenged and supported in their learning in the preschool classroom. The score of a 5 on the ELS instrument does not indicate that the child's learning in preschool is complete, but rather alerts the teacher to a child who may require advanced activities and interactions. Teachers may wish to contact local kindergarten teachers or appropriate kindergarten assessments for further support and guidance for these children.

Psychometrics

The psychometrics of the ELS are comparable to published instruments in the field of early childhood that utilize the same assessment approach (Riley-Ayers, Jung, & Frede, 2010). Average inter-rater reliability of teachers ranged from 71% to 77%, while trainers were considerably higher at 91% to 98%. The correlations for the ELS to standardized measures ranged from .39 to .46 on whole-instrument comparisons: the ELS to the *Early Literacy Skills Assessment* (ELSA) (DeBruin-Parecki, 2005) and the *Child Math Assessment* (Klein & Starkey, 2006). Subscale relationships were lower considering that the standardized tests, although closely aligned, were not an exact match to what is assessed on the ELS. (Writing was not included in the standardized literacy assessment, so it is not surprising that there was not a strong relationship between the writing subscale on the ELS and the ELSA total score.) For more information, view the full technical report online at www.nieer.org.

DOMAIN

Language and Literacy

ITEM

(10) Writing	1	2	3	4	5
	STRAND				
Composing	May identify scribbling as "writing" Does not give meaning to writing		Verbally labels own "writing" and drawing Provides dictation to an adult to be written on a piece of work		Writes symbols for a purpose—to convey information or tell a story
Production	Draws or scribbles		Makes forms that resemble letters May write his or her own name		Strings conventional letters together (other than his or her own name)

STRAND

INDICATORS

Using the System

The Assessment Process
The assessment process (see chart on page 11) is presented in a cyclical fashion because it is an iterative process in which teachers move flexibly from step to step and return to previous steps at any time based on the data collected or the events that occur with the student or in the classroom.

Standards (ELS)
Assessment begins with standards or a standards-based instrument. This provides the research base to guide teachers through the assessment process. Specifically, the ELS offers a targeted set of items across domains. The strands represented in these items are measurable, develop on a continuum, and are critical to present and future learning.

Observing and Investigating
Teachers use the items on the ELS to guide their observation and investigation of children's development in the classroom. Teachers watch and listen to children in a focused manner. They notice and hone in on the children's individual behaviors and look for specific instances of children demonstrating their knowledge and skills across the domains. Teachers watch children over time and in varied situations (Jablon, Dombro, & Dichtelmiller, 2007), and they interact with children while observing to investigate further what each child is capable of doing. The teacher as a participant-observer may ask probing questions or generate new situations to gain further insight. The teacher seamlessly observes and instructs.

Documenting and Reflecting
Teachers record their observations and reflect on the information. Observations are recorded by writing a description without judging or labeling what has occurred. Work samples are collected, dated, and described in an anecdote that references the work sample. Often teachers develop a personal system for recording and organizing the data. The ELS provides an anecdote form that separates the anecdotes by item and then cross-references to other items (page 51), as well as a generic anecdote form where teachers circle the appropriate item or items (page 55). In addition, a technology support component offers teachers a system to record and organize their data on the computer or handheld device. Many anecdotes or work samples provide information across items on the ELS. As teachers collect evidence through their observations, they reflect on ideas such as: what the child might have meant, how this shows progress or concern, whether the data gives enough information upon which to form judgments, and how they might adjust the activities to support or challenge this child or to gain more information. Teachers may reflect on the data independently or with a colleague such as a teaching assistant.

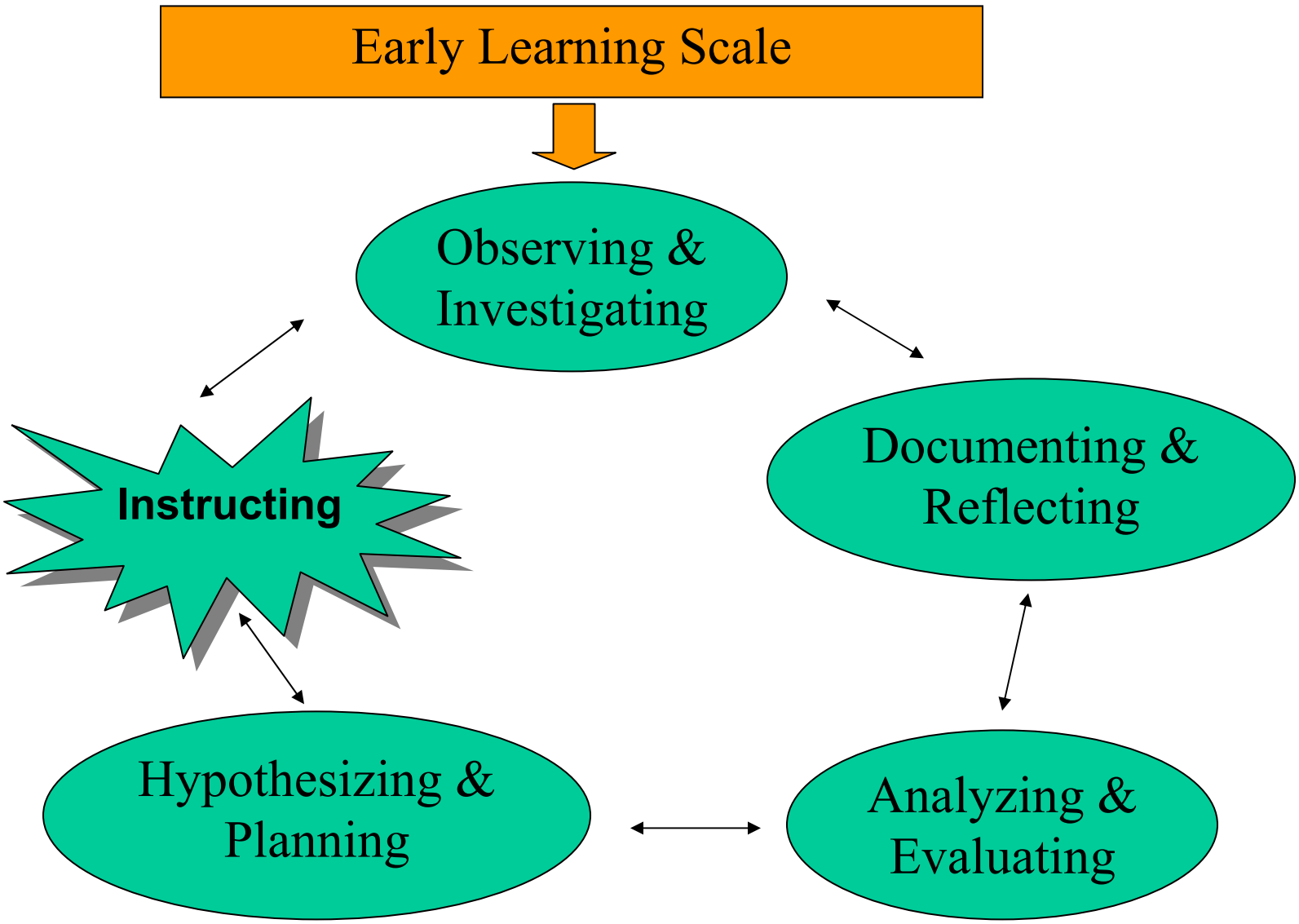
Analyzing and Evaluating
After observing and documenting data about a child over time, teachers take the opportunity to analyze the data as a whole. This analysis should be done periodically throughout the three score periods. Score periods are generally the fall (September to November), winter (December to February), and spring (March to May). The analysis is not meant to occur only at the end of a score period. The examination of data over time offers teachers the opportunity to determine what data are missing and to take action to collect the missing information. At the end of the score period, teachers evaluate the data collected on each child for each item on the ELS. The

data are examined in relation to the indicators for each strand and then a score is assigned for each item. (See scoring procedures on page 12 for more details.)

Hypothesizing and Planning
This step in the assessment process is not intended to occur only at the end of a score period. As data are collected and analyzed or reviewed by teachers, instructional implications must be determined for each student. Teachers may develop hypotheses about a particular child and set a goal of working with that child to test the hypotheses.

Instructing
Instruction is informed by the data collected. Teachers use this data to implement new activities, create new situations, provide new materials, and guide their interactions with students. Assessment and instruction are not separate acts, but rather work in concert to inform the teacher to be intentional in targeting the needs of the students and scaffolding their learning to the next level.

The Assessment Process



Scoring Procedures and Guidelines

Procedures

- Examine the evidence for each item. Then place the evidence on the continuum for each strand at 1, 3, or 5 based on the indicators for each score.
- Examine the score for each strand, and assign an appropriate score for the item as a whole.
    - If the scores for the strands are equivalent or if there is only one strand in the item, the overall score for the item is the same.
    - If the scores for the strands differ, use the middle score (not the average) as the overall score for the item.

Strand Scores	Item Score
1, 3	2
3, 5	4
1, 5	3
1, 3, 5	3
1, 1, 3	2
1, 3, 3	2
3, 3, 5	4
3, 5, 5	4
1, 1, 5	3
1, 5, 5	3
1, 3, 5, 5	3
1, 3, 3, 5	3
3, 3, 3, 5	4
3, 5, 5, 5	4
1, 1, 1, 5	3
1, 5, 5, 5	3

    - If one strand score differs significantly from the others, examine the data more closely to ensure that the scores are accurate.

Guidelines

- Review your evidence for each strand and provide credit for the child's best performance on the indicators for that strand. Higher-level evidence outweighs lower-level evidence.
- You do not need evidence for all the indicators in a strand, but you do need support for most.
- In order to score an item, the evidence must vary (i.e., evidence cannot all be about one specific skill, such as name recognition) and it must apply to all the strands in the item.
- It is the quality of the anecdotes that enables you to score, not necessarily the quantity. Only on very rare occasions can you have a clear picture of a child from one anecdote. Continue observing and documenting with a focus based on the evidence already collected.
- Interact with the children by probing to gain further insight into what they know or understand.
- One anecdote often applies to more than one strand in an item and may also apply to another item or another domain. But not all anecdotes apply to more than one item.
- You can observe two children at the same time, record one anecdote, and copy it for each child's folio.
- Anecdotes can vary in length. (Shorter anecdotes don't always mean a lower score.)

Child Accomplishments Summary

Instructions
This summary form assists teachers in planning instruction based on the data and also serves as an effective communication tool with parents.

1. Examine all the data collected for the child in the score period. Assign scores for each item.
2. Examine the data and the scores in one domain. Write one or two sentences summarizing the items in that domain for the child. This will provide a summary of the child's capabilities based on the data collected in that domain.
3. Write one or two sentences outlining your next steps for the child. Consider what activities you will plan and how you will continue to move the child forward in this domain.
4. Repeat the process for the other domains.
5. Consider what you have collected for the arts and physical development and write a brief summary of each area, including two or three sentences on the child's accomplishments and what you will do next with the child.
6. Write additional comments if needed.

Note: Only narrative data should be shared with parents, not the scores on the instrument. Parents will not be familiar with the ELS and thus a score will not carry meaning. Parents should not be given a copy of the ELS. The intention of communication with parents is to provide specific data and support for the descriptions of the child's development, as well as share future plans to move the child forward in learning.

Child Accomplishments Summary

Child's Name _____ Teachers _____ School _____ Score Period _____

Math/Science
Social-Emotional/Social Studies
Language and Literacy
Arts
Physical Development
Additional Comments

Child Accomplishments Summary Sample

Child's Name Jaclyn Teachers Ms. Smith School Mulberry Score Period Winter

Math/Science Jaclyn counts items accurately to five, understands there are more when items are combined, and writes numbers in her play. She is able to sort items and tell about the groups (such as when she sorted the foods for the refrigerator and freezer), and she is able to extend a simple pattern and identify several common shapes. In science, she is able to report observations, offer predictions, and investigate specific questions (as shown when she was exploring the snow in the water table). We will explore more science concepts throughout the year and encourage Jaclyn to expand her reporting and observing and to offer support for her predictions. Hands-on work with numbers and counting will extend her counting accurately beyond five and enhance her concept of numbers.
Social-Emotional/Social Studies Jaclyn moves through the classroom routines with minimal teacher direction, and she expresses her needs and feelings verbally without aggression. We will continue to take turns in play to practice sharing and working with friends to solve conflicts. Jaclyn's play is well developed in that she explores and experiments with a wide variety of materials in the classroom, successfully enters play, and has defined roles and story lines in her play. She is often drawn to the kitchen play area, where she plays with friends to act out a mom caring for her sick babies or shopping.
Language Arts and Literacy Jaclyn's oral language is well developed. She uses complex sentences and retells stories accurately while making personal connections. She shared with the group that she enjoys going to the restaurant with her grandma to eat burgers when we read a story about a little boy who does that with his family. Jaclyn is able to provide rhymes for words, identify many letters, and recognize print in the classroom such as classmates' names. She often writes during playtime and uses letters strung together to communicate a message. We will continue to encourage her writing during the day and offer support to extend the messages she is writing. We'll also continue to read books and the print in the classroom to expand her print recognition.
Arts Jaclyn participates in dance and movement activities with the class and responds to changes in the tempo. She sings along with the class and can sometimes be heard singing the song later in the day, such as during snack time. She often visits the art area during "choice time" and generates pictures of her family using various materials (paints, crayons, and markers).
Physical Development Jaclyn is active outside during play and often chooses to play ball with several of the boys in the class. She is able to throw and kick the ball. We will continue to practice catching the ball beginning with a large ball and proceeding to a smaller ball. She is able to run and balance on the curb around the playground for a short time.
Additional Comments Continue to read with Jaclyn at home. She seems to enjoy our lending library. Continue to encourage Jaclyn to count during daily activities. For example, ask her to get out enough forks and knives for the family to set the table for dinner, or have her sort socks from the laundry into pairs and then count how many socks there are altogether.

Item 1: Number and Numerical Operations
Domain: Math/Science

Research Base

During the preschool years, children display a natural inclination toward exploring mathematical concepts, including number and numerical operations. Through their experiences with numbers at home and at school, they construct a type of informal mathematics very early on (Seo & Ginsburg, 2004; NRC, 2009). A more formal understanding of number and numerical operations comes as they experience activities and work with materials in the preschool classroom that encourage counting, ordering, and reading and writing numbers. Children's understanding of many different number concepts is developed as they engage with these materials, exploring and solving problems posed by the teacher or on their own and with peers (Epstein, 2003). These daily experiences encourage children to use numbers in a variety of ways. For example, children may use numbers to compare sets of objects; put together or separate groups of objects; describe measurements; tell who was first, second, or third in a race; and count objects in a group (Greenes, 1999).

Counting

Children's understanding of number and numerical operations usually begins with simple oral counting rhythms, repeated at first as a song or in response to an activity such as climbing stairs. Most often, very young children begin the counting sequence without awareness of the relationship of numbers to quantity. Learning the counting sequence from one to twenty requires memorization of the number words. The numbers eleven to twenty are particularly difficult, with most errors occurring with numbers thirteen and fifteen. Beyond the number twenty, children need to recognize that a number pattern is repeated. Learning this "decade pattern" is difficult, and children tend to make most mistakes at the decade boundaries (e.g., twenty-eight, twenty-nine, twenty-ten) (Sarama & Clements, 2009).

Eventually, children learn that the number words are linked to the process of counting objects, and they begin to put the two acts together—saying number words and pointing to objects. At first, this is a very difficult task for children, but eventually they manage to point to one object at a time while saying each number (Baroody & Wilkins, 1999). Very young children often do not understand that the last number they say as they count a group of objects represents the number of objects present. This concept is referred to as cardinality and develops during the preschool years. Three-year-olds are usually able to count small sets if the objects are arranged in a straight line. As they become more competent at using the counting sequence, they can count more objects, but not always accurately. By age five, children are regularly counting sets of objects up to twenty or thirty, with the occasional lapse in accuracy, depending on their level of concentration (Sarama & Clements, 2009).

Reading and Writing Numbers

In order for children to be able to read numerals, they must first be able to differentiate the symbols. This requires them to construct a mental image of each numeral. By preschool, children usually have little difficulty identifying the numerals 1 to 9, with the occasional confusion of similar numerals such as 2 and 5 or 6 and 9. Learning to write numbers involves not only the mental image, but requires fine motor skills as well. So, although some children

may have the correct mental image, their motor skills may prevent them from accurately representing the numeral; and they often start in the wrong place or write the number backwards (Baroody, 1999). For this reason, it is important for preschool children to have many opportunities to identify and write numbers for a purpose.

Informal Addition and Subtraction Concepts and Skills

Children begin to develop an understanding of addition and subtraction concepts as they engage with groups of objects that can be manipulated. This begins at an early age as children begin to notice that adding to a group of objects means there are more, and taking away means there are fewer. They also begin engaging in discussions of who has more or less and what happens when two groups of objects are put together. By playing with small groups of objects, children prepare to apply their informal understanding of addition and subtraction to solving simple tasks or word problems (Seo & Ginsburg, 2004). Children develop the ability to use different strategies to solve problems, including using objects or fingers and using their knowledge of number patterns (Sarama & Clements, 2009). For example, children may be exploring counting by twos, and they can compare two sets of objects by lining them up in pairs of two and then comparing how many sets of two are in each group. They also use the "plus one" number pattern to solve simple addition problems—adding one more and then one more, counting up to solve the problem.

Standards

- Know number sequence up to twenty and recognize number pattern beyond twenty
- Understand numbers and their relationship to quantity
- Use counting strategies accurately to find quantity and solve problems
- Identify and write numerals and associate numerals with quantities
- Compare quantities to determine more than, less than, and equal
- Identify new quantities when adding to or taking away from sets of objects

Continuum Descriptions

Score 1

Children at this level are beginning to explore numbers and counting. They enjoy listening to someone count out loud and may use a number such as one, two, or three to identify how many are in a group. They do not yet recognize numbers independently. They explore numerical operations through their play by adding and taking items away. For example, a child may add blocks to the building to make it taller and take some away to make it smaller.

Score 3

Children at this level enjoy counting objects and may identify numbers in the environment or recognize that numbers are different from letters. For example, when asked the number of the classroom, the child is able to point to the number four on the door rather than a letter. He or she may not be able to identify it as the number four at this level. Children know and can say the number words in the counting sequence from one to ten and sometimes attempt to count beyond ten. When counting objects, they sometimes count out of order, skip numbers, or count objects more than once. They are counting objects regularly and accurately and understand that the last number stated represents how many are in the group. They may need assistance counting larger groups of objects because they lose their place, forget what number is next, or forget which object was counted last. When grouping objects, they understand that taking some away means

"fewer" and adding to the group means "more." They can solve simple addition or subtraction problems with small sets of objects (up to five). They are beginning to attempt to write some numerals, but they may not form the numerals accurately.

Score 5

Children at this level know and can say the number words in the counting sequence, and they are beginning to recite accurately the number words beyond the number twenty-nine. They use different strategies to add to and subtract from groups of items in small amounts, and they can compare small sets of objects (ten or fewer in each set) to determine which has more or less. They also begin to connect written numbers to quantities. For example, in the dramatic play area, after making a list of the children to invite to a birthday party, the child counts the number of children and writes the number at the bottom, so she knows how many cupcakes she will need to make.

Ideas for Teaching and Documenting

Use children's natural interests in numbers to decide which materials and activities to provide for them. Many materials should be available that encourage counting and are easy for children to count. There should also be many materials that present number symbols in various ways, and children should be encouraged to write number symbols in ways that are purposeful.

Assist children in counting activities and encourage them to compare and contrast groups of objects. Note children's counting errors.

Ask open-ended or thought-provoking follow-up questions to children's experiences with manipulatives, in order to discover how they are thinking informally about quantity or numerical operations.

Whenever possible, counting, addition, and subtraction activities should be meaningful for children. This means finding ways to encourage them to think about numbers while they are engaged in activities that interest them. For example, in the dramatic play area, a teacher joins the table for "lunch" and says, "There were three of you eating here before. Now that I'm here, how many cups and plates do we need?"

Sample Anecdotes

Dramatic Play Area

Ari takes egg shakers and brings them to the house area. She opens the empty egg carton and begins to place one egg shaker into each empty space in the carton. The teacher asks her how many egg shakers she will need to fill the carton. She counts the spaces one to twelve and says, "Twelve."

Small Toy Area

Sasha takes all the red pegs out of the container and counts them on the table. She points to each peg and counts, "One, two, three, four, five. . .five, six, eight, nine, ten!"

Circle Time

Makaela accurately counts the boys in the class and says, "Eight." The teacher asks if she can write the number eight on the message board next to the picture of the boy. She says she does not know how to write the number eight, so the teacher shows her and she then writes the number correctly. Then Makaela counts the six girls in the class and says, "There are more boys! Boys have eight and girls have six." She accurately writes the number six next to the picture of the girl on the message board.

Lunch Time

Alexander is helping to set the table. The teacher asks, "How many children are here today? How many places do you have to set?" He touches each child's head and counts to thirteen. The teacher asks again, "So, how many places do you need?" Alex starts to count again.

For Further Reading

Copley, J. (Ed.). (1999). *Mathematics in the early years.* Reston, VA: National Council of Teachers of Mathematics and Washington, DC: National Association for the Education of Young Children.

Sarama, J., & Clements, D. H. (2009). *Early childhood mathematics education research: Learning trajectories for young children.* New York, NY: Routledge.

Item 2: Classification and Algebraic Thinking
Domain: Math/Science

Research Base
Preschool classrooms provide children with many varied opportunities to observe and explore interesting and engaging events. Such experiences introduce children to the world of logical thinking and contribute to the development of learning skills such as inquisitiveness, creativity, flexibility, and persistence (Clements, 2004). Classification requires children to use inductive reasoning and problem-solving skills, and it prepares them for future experiences with numerical operations and concepts of probability (Basile, 1999).

Algebraic thinking in the early years includes recognizing relationships. As children work with patterns, they learn to identify and create relationships among objects based on shared attributes (such as color, shape, size, function, etc.). Children need access to materials that provide them with opportunities to work with and organize materials. Teachers should provide opportunities for children to explore patterns in the environment—from musical rhythms to patterns found in nature—and to represent and demonstrate their experiences through art, drawing, and use of manipulatives. At this age, children enjoy identifying attributes of different objects and organizing materials based on similarities or variations in attributes.

Standards
- Sort objects by one or more attributes and describe
- Organize objects by variations in attributes
- Identify patterns in the environment
- Identify, copy, and extend simple to complex patterns

Continuum Descriptions
Score 1
Children at this level are keen observers of their environments and have an expanding receptive vocabulary. However, much of what they observe they are not yet able to fully describe. Instead, they use simple comments and language to describe events. They notice similar attributes of objects and recognize simple patterns. They may notice that all the circles on the page of a book are red or that the stripes on a shirt form a *red*, *blue*, *red*, *blue* pattern. At this level, children also demonstrate an understanding of patterns by repeating patterns they hear in songs or rhymes, and children can copy a simple sound pattern such as *clap*, *stomp*, *clap*, *stomp*.

Score 3
Children at this level are doing more than simply identifying similar attributes; they are beginning to group objects based on those attributes. For example, they may put all the red counting bears on the red plate and the yellow bears on the yellow plate, or they may build a block structure using only one type of block. They are also able to extend a simple pattern. For example, if the teacher creates a line of counting bears in an ABAB repeating pattern, the child can continue the series.

Score 5

Children at this level are able to determine similarities and differences among objects, sort them in their own way, and describe their method. For example, children may choose to sort buttons by color, number of holes, or size, and then they describe how they sorted the buttons. A child at this level might sort pictures of animals by their habitats and describe their sorting by saying, "The polar bear and the seal both live in cold places, but the snake and the tortoise live in the hot, hot desert." Children at the higher end of this level may be able to sort objects based on more than one attribute. For example, they may sort buttons into four groups: small with two holes, small with four holes, large with two holes, and large with four holes.

Ideas for Teaching and Documenting

Encourage children to discuss naturally occurring patterns in the environment, and ask questions that encourage reflection, clarification, or more detailed description. For example, ask, "What do you think will come next in the pattern?" or "Could we make a pattern that is the same but use different colors?" or "How is this one different from that one?"

Follow up activities with opportunities for children to reflect on or represent what they have discovered in their play (National Council of Teachers of Mathematics, 2000) through discussion, drawing, and simple graphing. For example, have children graph the different types of animals they saw on a community walk or look at family pictures and discuss similarities and differences.

Encourage children to share their ideas and discoveries with other children in the class, either verbally or through a drawing.

Provide many and varied objects for children to sort and classify in different ways, such as counting bears, links, small animals, buttons, keys, collage materials, pattern blocks, pebbles, leaves, seed pods, seashells, etc. Encourage children to develop and explain their own methods for sorting and to find alternate methods.

Sample Anecdotes

Small Manipulatives

Maria takes out the counting bears and dumps them on the table. She puts all the blue bears together, then all the yellow bears, and so on. She points to each of the groups and says, "They a family. That the blue family and that the yellow family." She then divides the "families" into groups of "babies," "mommies," and "daddies," and she tells the teacher who is in each group.

Water Table

Jared pulls a plastic frog out of a bin of animals and says, "This frog has green dots on its back." When the teacher asks if all the frogs have green spots, he responds by finding more frogs and saying, "No, look! This one don't got any spots, and this one got stripes."

Large Group Area

There is a pattern on the message board with two missing shapes at the end. Xavier points to the board and says, "A pattern!" As the teacher identifies the *triangle*, *circle*, *triangle*, *circle* pattern, Xavier correctly identifies the two missing shapes at the end.

For Further Reading

Clements, D. H., & Sarama, J. (Eds.). (2004). *Engaging young children in mathematics: Standards for early childhood mathematics education*. Mahwah, NJ: Lawrence Erlbaum.

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Item 3: Geometry and Measurement
Domain: Math/Science

Research Base
Children's ability to understand mathematical concepts goes beyond number and numerical operations. Their interests also include differences in attributes, patterns, measurement, and shapes (Epstein, 2003). Early on, children are able to distinguish among and identify simple shapes such as circles, squares, and triangles, and they can eventually learn to identify additional shapes such as trapezoids, hexagons, and parallelograms (Sarama & Clements, 2009). Older preschoolers use what they know about shape attributes to organize shapes, compare them, and use them to solve problems. Through interaction with three-dimensional shapes, they are eventually able to recognize the relationship between two- and three-dimensional shapes (e.g., the different sides of a cube look like squares) (Greenes, 1999). In order to fully understand shapes and their properties, it is important for children to actively engage with the shapes and reflect on what they have discovered. The simple act of naming familiar shapes is not sufficient for true understanding (Clements, 1999).

There are also many opportunities for children to explore concepts of measurement. Concepts such as shape, space, and number can all be learned through experiences with measurement. And children's understanding is not limited to length and height. They are capable of considering complex concepts such as weight and volume and comparing objects according to these attributes (Greenes, 1999). By offering many and varied opportunities for children to explore concepts of measurement, teachers provide children with the foundation required to develop spatial, number, and problem-solving skills (Lang, 2001).

Standards
- Recognize and name common and irregular shapes and identify them by their attributes
- Compare and contrast attributes of two- and three-dimensional shapes
- Use knowledge of shapes to solve problems
- Compare and contrast various measurement attributes
- Order and compare objects by one or more measureable attributes
- Use standard or nonstandard measurement attributes to measure and compare

Continuum Descriptions
<u>Score 1</u>
Children at this level are interested in manipulating shapes and putting together and taking apart objects that fit together. They can identify a circle and square. They understand differences in the size and length of objects only when those differences are extreme.

<u>Score 3</u>
Children at this level are able to identify common shapes such as square, triangle, circle, and rectangle. They begin to manipulate shape orientations to solve problems such as whether the shapes are the same or whether a puzzle piece will fit in a space. They also make direct comparisons of height or length when objects share a common base.

Score 5
Children at this level are beginning to identify three-dimensional shapes and relating the faces to two-dimensional shapes. They use what they know about shapes and shape attributes to solve problems. They are also using standard tools (such as measuring tapes and cups) and/or nonstandard tools (such as hands, string, or paper strips) to measure for a purpose. They use a common base to identify the differences in heights and/or lengths of various objects or structures (i.e., children understand that to accurately compare length or height, the base of each object must start at the same point).

Ideas for Teaching and Documenting
Provide children with many variations of shapes, including simple shapes, two- and three-dimensional shapes, irregular shapes, and shapes that can be taken apart and put back together.

Give attention to and record what children talk about in the block area as they explore three-dimensional shapes and compare heights, lengths, and weights of blocks.

Listen for children's descriptions of things, such as when they say an object is bigger than, smaller than, longer than, shorter than, etc.

Provide materials that encourage measurement in different play areas, such as bottles and cups of various sizes in the sand and water area, inch cubes and links in the manipulatives center, measuring tapes in the block area, and measuring cups or spoons in the dramatic play area. When children are comparing size, suggest they use measurement.

Sample Anecdotes
Small Group
Raja is working with three-dimensional shapes and identifies the cube as a "square," the sphere as a "circle," the pyramid as a "triangle," and the rectangular prism as a "rectangle."

Math Center
Sabrina is using pattern shapes to make new shapes. The teacher asks if she can use the trapezoid shapes to make a hexagon. She places a hexagon on the table. Then she picks up a trapezoid, rotates it over the hexagon until it matches one side, and places it on top of the hexagon. She picks up another trapezoid and puts it next to the first one with the shorter parallel side in the middle. She immediately flips the trapezoid over so the longer parallel side is in the middle, and she pushes the two trapezoids together to make the hexagon.

Small Manipulatives
After the teacher measures a block using inch cubes, Jamaal measures the length of a shoe using inch cubes. He counts the blocks and says, "See, it's five blocks long."

Block Area
Tamera is using the big hollow blocks to build a structure. She picks up the largest block and says, "Oh, this is so heavy!" Then she picks up a shorter block and says, "This one is better." The teacher puts the two blocks next to each other and asks the child which one is heavier. The child points to the longer block and says, "That one's bigger. So heavy."

For Further Reading

Copley, J. (2000). *The young child and mathematics*. Washington, DC: National Association for the Education of Young Children.

Sarama, J., & Clements, D. H. (2009). *Early childhood mathematics education research: Learning trajectories for young children.* New York, NY: Routledge.

Item 4: Scientific Inquiry
Domain: Math/Science

Research Base
Children are inherently curious about their environment and spend much of their day wondering about the way things work in the world around them. Preschoolers ask "why," "how," and "what if" questions about all kinds of things, such as where baby cows come from, why people have different colored eyes, and whether worms hug each other (Callanan & Oakes, 1992; Chouinard, 2007; Worth & Grollman, 2003). They make predictions, try to describe simple cause-and-effect relationships, and engage in conversations and explorations that allow them to answer questions of interest to them (Brenneman, 2009; Callanan & Oakes, 1992; Peterson & French, 2008). For example, in the block area, a child wonders what will happen if he places a large block on top of a tower of small blocks, then tries it to find out. In the art area, two children notice what happens to the paint colors when they accidentally put their brushes in the wrong containers, then decide to purposely mix colors to make new colors. Outside on the playground, children notice the leaves on the trees changing colors and falling to the ground. They wonder why it happens, then ask their teacher to explain.

Children's natural curiosity spurs cognitive and language development as they engage in hands-on activities, discover new relationships, and attempt to communicate their new knowledge. Such experiences are primary sources for children's learning at this age (French, 2004). Adults can encourage language and cognitive development by being responsive to information-seeking questions and by asking children cognitively challenging questions such as, "What would happen if…?" (Chouinard, 2007; Massey, Pence, Justice, & Bowles, 2008). When children are provided with the kinds of science experiences that encourage them to make predictions, describe and explain results, and provide reasons for their ideas, their language and science skills are supported (Peterson & French, 2008). In addition to talking about their observations and ideas, preschoolers can record them through drawing. Providing opportunities for children to record through drawing and to describe what they have drawn supports children's learning as they reflect on what they have observed and drawn and try to describe it with words. Talking with children about their drawings provides teachers with important information about children's science understanding and language development (Brenneman & Louro, 2008).

Standards
- Participate in investigations to form hypotheses, gather observations, draw conclusions, and form generalizations
- Describe and support predictions
- Observe and discuss similarities and differences among objects and materials including cause and effect
- Collect, describe, and record information through a variety of means
- Use senses and tools (including technology) to gather information, investigate, observe, and record processes, relationships, and natural phenomena

Continuum Descriptions
<u>Score 1</u>

Children at this level are able to provide simple descriptions of objects and events, but they are not likely to link their observations to prior knowledge or to make predictions about future events during scientific exploration. They may make brief descriptive comments when asked a question, but they do not elaborate and do not tend to generate new questions related to scientific phenomena. For example, a child notices that a duck floats in the water table, but when asked why the duck floats, the child may shrug or respond, "I don't know." This child might stop exploring at this point, whereas children at other levels will begin to predict which objects will float and test their ideas.

Score 3

Children at this level show interest in scientific activities, ask questions about why things happen, and provide informative descriptions of objects and phenomena or events. They might make simple predictions, but they are not yet able to provide evidence or reasons for the predictions they make. For example, while using the balance scales, the teacher asks the children to predict what will happen when she puts five cotton balls on one side of the scale and five marbles on the other. The children might say the scale will go down or the side with the marbles will go down, but they are not able to explain the reasons for their prediction. After they observe the marbles weighing down the scale, one child describes what occurred but without explanation: "The marbles made it go down more." Other children at this level might provide an explanation, but one that is not relevant or logical such as, "That side goed down 'cause they're so round." Children at this level might put different objects on the scale, but they don't show evidence that they are *planning* to test which objects are heavier than others.

Score 5

Children at this level enjoy engaging in scientific exploration, actively engaging in making predictions, solving problems, and discussing outcomes. These children may initiate "experiments" to discover answers to questions. For example, when playing in the block area, a child wants to find out which of two cars is faster. She builds a ramp out of boards and blocks to race the two cars. She repeats the race a few times. Afterward, she tells the teacher, "The red car is faster than the blue car. It wins every time. I wonder if it will beat the yellow truck. I'm going to find out!" She then races the red car and the yellow truck to try to answer her question. A child at this level also provides explanations for causal events, such as, "The ice cube we put outside melted so fast because it is very, very hot out there." The child shows plans for finding answers to questions through exploration or by using books and other research materials.

Ideas for Teaching and Documenting

Observe and note "why" questions that suggest science-related concepts. Develop small-group or center-based activities to encourage concrete inquiries into questions that are raised by children. Ask children to provide ideas for how to investigate their own questions.

Look for opportunities to explore phenomena in various learning centers. For example, mixing colors in the art area, exploring how the shape and size of blocks affects balancing in the block area, cooking in the dramatic play area, sinking and floating in water play, mixing dry and wet substances in the sensory table, and observing the movement of insects in the outdoor area.

Introduce children to science tools and materials that will be useful to them in their scientific explorations, including magnifiers, balance scales, and other simple measurement tools.

Model the use of books, the Internet, and nonfiction magazines to do research to find answers to children's questions. Doing so is especially useful when children ask questions about, or show interest in, objects and events that are not in their immediate environment (e.g., children in Iowa want to know about sea animals or preschoolers in Miami are interested in snow).

Provide opportunities for children to draw or write about their experiences and ask them open-ended questions about the objects and events that they have depicted.

To draw children to your classroom science area, provide exciting materials for children to explore (such as worm habitats or ramps and marbles), advertise new materials by introducing them during large-group learning times, and spend time in the science area yourself. Children tend to congregate where the teacher is. Your presence encourages them to come to the science area and allows you to document their explorations there.

Sample Anecdotes

Manipulatives

Jared is playing with the balance scale and beads. He puts all the small beads on one side and the large beads on the other side. When the side with the large beads goes down, Jared says, "Hmm…how come that side is down?" He looks at the side with the small beads, saying, "There's more beads in here."

Block Area

Jose says, "I can put these shapes on the slides and see what comes first. Look, this one will win." The teacher asks him why that one will win, and he says, "Because that one is really round, like a ball. So it will come first. The other one is not so round, so it will lose."

Discovery Center

The teacher asks, "Which side of the scale do you think will go down if I put the heavy cylinder in this bucket?" Sabrina responds, "Oh, this side, with the heavy one, because it's heavy."

The class has been growing bean seeds. Kadejah is recording the plants' growth in her science journal. She says, "I need green 'cause it's green." When her drawing is complete, she makes some linear marks and says, "See? I wrote the name right there."

Outside

The students find an unusual rock while on a walk in the neighborhood. Suraj asks to take it back to the classroom so he can observe it with a magnifier. While he looks at it with the magnifier, he asks the teacher what kind of rock it is. She says she doesn't know, but she wonders if he has any ideas how they could find out. Suraj suggests looking in a book about rocks.

Maria and Bryan are digging next to the fence. They are very excited to discover a worm. Maria asks if she can pick it up and move it so she can watch how it moves. She observes carefully, saying, "It wiggles and wiggles like this. Except it doesn't have legs like me!" She starts dancing and wiggling. Then she says, "Hey, guys, do the worm dance with me! Wiggle like this!" Bryan and other classmates join Maria's dance, giggling.

For Further Reading

Conezio, K., & French, L. (2002, September). Science in the preschool classroom: Capitalizing on children's fascination with the everyday world to foster language and literacy development. *Young Children, 57*, 12-18.

Gelman, R., Brenneman, K., Macdonald, G., & Román, M. (2009). *Preschool pathways to science (PrePS): Facilitating scientific ways of thinking, talking, doing, and understanding.* Baltimore, MD: Brookes Publishing.

Helm, J. H., & Katz, L. (2011). *Young investigators: The project approach in the early years* (2nd ed.). New York: Teachers College Press.

Koralek, D., & Colker, L. J. (Eds.). (2003). *Spotlight on young children and science*. Washington, DC: National Association for the Education of Young Children.

Lind, K. K. (2004). *Exploring science in early childhood: A developmental approach.* Clifton Park, NY: Thomson Delmar Learning.

Worth, K., & Grollman, S. (2003). *Worms, shadows, and whirlpools: Science in the early childhood classroom.* Portsmouth, NH: Heinemann.

Item 5: Self-Regulation
Domain: Social-Emotional/Social Studies

Research Base
Once children are aware of themselves as individuals, and thus able to identify their own gender, family, and culture, they become more sensitive to the ways people might see them. They also become more aware of how people think differently and that other people might have feelings that are different from their own. This awareness provides a foundation for emotions like empathy and envy (Lewis, 2000). Additionally, an accurate self-awareness that allows a child to openly and honestly identify strengths, stand up for his or her own rights, and express needs, will serve to enhance a child's resiliency (Hippe, 2004).

A growing body of research indicates that unless children achieve minimal social competence (a large component of which is self-awareness) by about the age of six, they have a high probability of being at risk throughout life (McCabe & Frede, 2007). Ladd et al. (1999) maintain that children's ability to cooperate and compromise with other children and adults results in early school achievement. Given that cooperative behavior has shown to be an independent predictor of children's academic achievement (Wentzel, 1993), and that peer cooperation difficulties in childhood predict serious adjustment problems in later life (O'Neil, Welsh, Parke, Wang, & Strand, 1997), the demonstration of cooperative, sharing, and helpful behavior is crucial to overall development (Thompson, 2002).

The ability to control one's behavior is necessary for children's successful adjustment at home and in school (Rohrbeck, Azar, & Wagner, 1991). Indeed, children's ability to concentrate on a task and follow the daily routine is a determinant of their school achievement (Alexander, Entwisle, & Dauber, 1993). Kindergarten teachers report that helping children learn to follow directions is a primary concern (Rimm-Kaufman, Pianta, & Cox, 2001). Empirical research indicates that self-regulation is not only important for social functioning, but it's as important as IQ and aptitude for success in school. For instance, Kendall, Zupan, and Braswell (1981) found that children who lacked self-control had deficits in social perspective taking. In addition, students with a lack of self-regulation often display aggression, impulsivity, noncompliance, and distraction that result in poor academic achievement (Carr & Punzo, 1993). Self-regulation strategies, such as an ability to adapt behavior to fit different situations, can produce improvements in academic productivity and on-task behavior (Reid, Trout, & Schartz, 2005). Murry and Brody (2001) found that children demonstrating self-regulation tend to display greater academic achievement one year later. Self-regulation in young children has even been found to predict achievement better than IQ test scores (Blair, 2002; Blair & Razza, 2007).

Standards
- Use appropriate communication skills to express needs, wants, and feelings without aggression
- Develop independence in a range of activities including classroom and health routines and tasks
- Use and accept negotiation, compromise, and discussion to resolve conflicts
- Demonstrate empathy and caring for others

- Share materials and take turns

Continuum Descriptions

Score 1

Children at this level often act on impulse and do not demonstrate self-regulation. These children are often found in conflict with other children and are not able to resolve those conflicts. For example, a child holds onto an object when another child is holding it as well, and they yell back and forth about who had it first. These children are not able to come to a solution even with teacher support and often need to be removed from the situation. Children at this level require strong support from the teacher to move through the classroom routines and are often found off-task or wandering around the room.

Score 3

Children at this level demonstrate emerging self-regulation with support and reminders from the teacher. They may engage in conflicts with others, but with the teacher's support and guidance they can resolve the conflict without needing to be removed from the situation. They are beginning to understand others' feelings and may comment on them, but they do not act on them or relate them to their own feelings. For example, they may comment that a friend is really angry but not be able to describe why or relate it to their own feelings. They are engaging more in the routines of the classroom and ask for assistance when needed.

Score 5

Children at this level usually demonstrate self-regulation by taking turns, sharing at times, and attempting to solve social conflicts independently without aggression. They attempt to engage independently in the social problem-solving cycle by identifying the issue, generating possible solutions, and negotiating and enacting a solution with the other person. These children verbally describe how they are feeling and channel negative feelings through coping techniques. They relate to other children and show their empathy by providing verbal support and comfort. For example, when a child is upset because he misses his mother, another child bends down and says, "It's OK. She'll be back after our rest." These children move smoothly through classroom routines and solve issues that arise. For example, when a child notices the nametag is not where it should be, he looks in the block area since that was where it was the day before.

Ideas for Teaching and Documenting

Plan time for children to be engaged in activities independently and in small groups. Note how children respond to changes in the routine.

Observe children interacting with each other. Consider how they use their time and look at how they respond when they encounter adverse situations.

Read stories and record how children discuss the characters' feelings and motives. Read books about cooperation and act out puppet shows that demonstrate positive problem solving.

Engage children in discussions about their plans and feelings. For example, you might say, "I can tell by the way you are standing that you are angry that Tyrie took that cooking pot from you. Let's take a couple of deep breaths and then see if we can talk to him about that." Or you

might say, "I see that you haven't worked in the art area in a while. Let me show you the new material we have and what I can make with it. Then you can decide if you'd like to make something." You also might say, "It looks like you are having trouble stacking those tall blocks. What can we do?"

Make your own behavior regulation explicit through self-talk: "I'm really upset that we're not able to go outside today because the weather is rainy. I'm sure that some of you feel the same way. But I bet that we'll have a good time in the gym instead. Maybe we'll be able to go out tomorrow so I can show you the new equipment we have on the playground."

Sample Anecdotes

Lunch Time

The teacher calls students one at a time to get ready for lunch. When Henry's name is called, he sits down at the lunch table. The assistant teacher reminds Henry to wash his hands. After washing his hands, Henry returns to the table. He sits for five minutes without eating. The teacher asks, "Are you hungry today?" Henry responds by giving her his juice box. The teacher puts the straw in, and he drinks it up and then begins to eat his lunch.

Block Area

Robert is building a tower with a slide to roll objects. When Dymond knocks the tower down, he tells her, "Help me clean this up, and it's OK." She bends down and picks up two blocks and places them on top of each other. Each child then continues to build separate towers. Then Robert looks up from his own tower to see the other and says, "Wow, cool! Here, put this one on top and it will be even taller than mine."

Writing Center

Natalie is working next to Desiree, and each child is writing on a piece of lined paper. Natalie writes the letters D and S. She says to Desiree, "Look, I wrote your name." Desiree responds, "That's not my name. You need more letters." Then she takes the marker from Natalie and begins to write her name on the page. Natalie yells, "That's mine!" Each child grabs a part of the marker and pulls at it. The teacher comes over and takes the marker. She models several deep breaths, and the children stop and take deep breaths. Then Natalie says, "I had it first. She took it." The teacher continues the discussion, and the children decide that Desiree just wants to write the rest of the letters in her name and she can do that with another marker.

Clean-Up Time

Sasha is playing with Anthony with the table toys. When it is time to clean up, she begins to put away the counting bears. Anthony finishes putting away his toy and begins to pick up the counting bears and put them in the container. Sasha pushes him away, yelling, "No, mine!" The teacher talks with Sasha, explaining that Anthony was helping her. Sasha pushes the teacher and yells, "No, mine!" This continues several times.

For Further Reading

Hyson, M. (2008). *Enthusiastic and engaged learners: Approaches to learning in the early childhood classroom.* New York: Teachers College Press.

Epstein, A. (2009). *Me, you, us: Social-emotional learning in preschool.* Ypsilanti, MI: HighScope Press.

Item 6: Play
Domain: Social-Emotional/Social Studies

Research Base

A child's ability to interact with others contributes greatly to overall learning. Johnson (1980) affirms that experiences with peers are not simply luxuries to be enjoyed; rather, they are an absolute necessity for healthy cognitive and social development. Being cooperative and helpful can result in positive, academically relevant interactions with teachers and peers (Sieber, 1979). For instance, Damon and Phelps (1989) demonstrate that positive peer cooperation can promote cognitive development and intellectual problem solving. Further, children who cannot interact cooperatively in the early years often achieve poor school achievement in later grades (Hawkins & Lishner, 1987). Likewise, an inability to compromise and resolve conflicts results in a deprivation of valuable interactions, thus placing children at risk for academic failure (Wentzel, 1993).

Play helps children learn self-regulation because it is an imaginary situation governed by social rules (Bodrova & Leong, 2007). Play is demanding and constricting. For example, when pretending to be a cat, the child can only behave in certain ways that fit the social rules, and he must curb his own immediate impulses in order to think and represent what the cat will do. Learning to follow rules is necessary for success in school and life, and make-believe play and games with rules help children develop these abilities (Bodrova & Leong, 2007). Additionally, pretend play contributes to the development of abstract thought. This aids in all forms of later learning that are symbols based. Social pretend activities lead to more cooperative and longer lasting interactions among children (Connolly, Doyle, & Reznick, 1988). Children who spend more time in dramatic play develop greater abilities to understand others as well as greater cognitive capacity. Play also promotes memory development—when children play with materials, they remember them better because they used functional categories to aid in remembering. Play also promotes storytelling and story memory, both of which are very important early literacy skills (Bodrova & Leong, 2007). In play, children teach each other acceptable language and extend one another's vocabularies (Berk, 1994).

<u>Play Definitions</u>

- Functional play: simple repetitive motor movements
- Constructive play: creating or constructing something
- Sociodramatic (make-believe) play: acting out roles
- Parallel play: limited social participation in which the child plays near other children with similar materials but does not influence their behavior
- Associative play: a form of social participation in which children are engaged in separate activities, but they interact by exchanging toys and commenting on one another's behavior
- Cooperative play: true social participation in which children orient toward a common goal during play, such as acting out a make-believe theme or working on the same product

Standards

- Make independent decisions about tasks to engage in and materials to use in the classroom
- Participate in a variety of classroom activities and tasks and use a variety of materials
- Engage in a variety of tasks and activities
- Join in play with others and invite others to play
- Assume and negotiate roles in play with others
- Engage in cooperative group play

The standards listed below are often observed through children's dramatic play:

- Identify a variety of jobs and the work associated with them
- Demonstrate an understanding of family structure

Continuum Descriptions

Score 1

Children at this level do not often engage in play, and when they do, it is usually on their own. They may play near another child but do not interact with him or her. They are only able to pretend with objects if the toy object closely represents the real object. They may use objects in their play, but only as their intended use, such as talking on a telephone. They can use a toy car as a car, but they are not yet able to pretend that a block is a car.

Score 3

Children at this level are more engaged in play, but they are easily distracted and often stray off task when transitioning. For example, they may leave the block area and wander around for some time before becoming engaged again. They do engage in pretend play, but it is simplistic in that they do not assign roles or create story lines. They mostly repeat fairly stereotypical behaviors, such as crying when pretending to be the baby or crawling on the floor as the cat. They will engage in associative play in which they interact with other children, but they are engaged in a separate activity. For example, a child playing with the table settings near a classmate who is dressing up in the housekeeping area may comment, "I like your tie." But the child will not engage in role-playing with the classmate.

Score 5

Children at this level are engaged in purposeful play for most of their "choice time," and they work with a wide variety of materials. For example, a child visits all the areas in the classroom, and the teacher has evidence of the child engaging with more than four or five items or materials in the classroom (play dough, dress-up clothes, puzzles, writing materials, painting and other art materials, etc.). Children are also capable of entering into an existing play scenario. They negotiate roles and create story lines that may be related to what they see in their families or community. For example, the child enters the music area where children are playing and says, "Let's be a band. You be the drummer. I'll do the singing." He then goes to the block area and gets a block to use as a microphone. He decides that they have to practice because they "have to play for church."

Ideas for Teaching and Documenting

Observe how children play with others, the content of their play, and how they manage issues that arise.

Plan opportunities for children to play and interact with each other in small groups. Provide a variety of materials to encourage play.

Spend time in the dramatic play area. Become part of the play when it is simplistic by asking questions and extending play into more complex story lines with additional roles. Invite those who do not usually engage in dramatic play. However, be sure to exit the play once the children are involved in the story line.

Encourage dramatic play in areas around the classroom. For example, build a city in the block area and have drivers stuck in traffic on the roads, or have children write letters in the writing center and deliver them as postal workers.

Sample Anecdotes

Table Area

Kedar joins two children who are using play dough and says, "Hey, I want to bake too." He takes a roller that no one is using and pounds the dough, then gives it to his friend. He says, "Look, we can make bread. Want to?" The two boys pound the dough and cut it up independently.

Block Area

Peter and Raphael are building structures next to each other. They build like this for ten minutes. When Peter's structure falls down, Raphael shouts, "Whoa! Down it goed! Use this one." He hands Peter one of the long blocks he is using.

Housekeeping Area

Several boys go to the housekeeping area to make pizza. Jerome says, "Look, Mr. Pedro, I'm the pizza man. You want some? You're my friend. First you roll this (points to the dough), cook it, and do this (uses the pizza cutter to make slices). Four pieces now."

Water Table

Linda joins two other children who are playing at the water table and asks, "Can we do experiments?" The three girls agree with Linda and decide to put objects in the water. Linda says, "Mine is floating! Yours went down fast. Faster than mine. Let me try that one. I think I can make it go down even faster."

Small Toy Area

Jordany plays at the table with small blocks and block people. He asks the teacher if she would like to play with him. He gives the teacher two people and says, "OK, these are the good guys, and they have to watch out because the bad guys are trying to get them." The teacher asks, "Which ones are the bad guys?" Jordany says, "These are the bad guys. They're robots, and they're gonna turn your guys into bad guy robots. Oh no, yours are bad guys now! They are robots now! Make them robots." The teacher says, "But I don't know how to be a robot." Jordany explains, "They say (in a monotone voice), 'All istems A-OK. All istems A-OK.' That's how you know it's a robot."

For Further Reading

Hirsh-Pasek, K., Golinkoff, R. M., Berk, L. E., & Singer, D. G. (2009). *A mandate for playful learning in preschool: Presenting the evidence.* New York: Oxford University Press.

National Association for the Education of Young Children. (n.d.). *Dramatic play: More than playing house* [DVD]. (Available in Spanish.)

National Association for the Education of Young Children. (2003, May). *Young Children* (cluster articles on Play).

Item 7: Oral Language
Domain: Language and Literacy

Research Base
Oral language is the foundation of early literacy (Dickinson & Tabors, 2001). Children learn through their oral interactions with adults and other children, and they use these interactions to build their knowledge of the world around them, describe events, and extend their vocabulary (Strickland & Shanahan, 2004). Research has shown that young children's oral language, especially their vocabulary development, has a strong relationship to later reading achievement (Hart & Risely, 1995; Clay, 1975; Duke, Pressley, & Hilden, 2004; Nagy & Scott, 2000; Dickinson & Tabors, 2001; National Early Literacy Panel [NELP], 2008; Dickinson & Porche, 2011). Particularly, children's vocabulary size is related to their ability to decode difficult words in later reading (Ouellette, 2006; Ricketts, Nation, & Bishop, 2007). Once a child is able to recognize printed words, comprehension of text depends heavily on the reader's oral-language abilities. The child needs to understand the meaning of words, as well as the syntactic (grammatical) and semantic (meaning) relationships among them (Snow, Burns, & Griffin, 1998).

Teachers play a strong role in supporting early language development, which in turn supports later literacy learning. For example, preschool teachers who use varied vocabulary and engage in high-level discussions about books may enable children to learn language, vocabulary, and print skills that impact later learning (Dickinson & Porche, 2011). The quality of teacher interactions with children is critical. Teachers must converse with children in meaningful ways to generate critical-thinking skills and utilize varied vocabulary (Dickinson & Tabors, 2001).

Standards
- Understand and use increasingly complex and varied vocabulary and sentence structure
- Participate in conversations with peers and adults
- Stay on topic in conversations
- Respond to questions from peers or adults
- Ask questions to get information, seek help, or clarify
- Retell stories

Continuum Descriptions
Score 1
Children at this level are not attentive during listening activities and rarely participate, especially in discussions about literature. Their communication is limited to gestures and short phrases such as "Me go" as they point outside and "Mommy" as they show a picture they drew. Children at this level will choose a familiar book and describe the pictures they see rather than retell the story.

Score 3
Children at this level are attentive and responsive during listening activities and participate, but they may share information that is off topic. For example, during a discussion about the class trip they instead talk about what they did at their grandma's house or what they brought for

snack. They respond to low-level questions that do not require connection or expansion such as, "Did you like that story?" and "What's your favorite fruit?" They speak in simple sentences to ask questions (such as, "Ms. Stacey, can I play in the kitchen?") or to communicate what they've done (such as saying, "The fire goed out!" while playing firefighter during dramatic play). Children at this level are able to retell a story with major components such as characters or main events, but they may confuse or eliminate details.

Score 5

Children at this level are active listeners and readily participate in discussions. Their language is complex. For example, they combine two phrases so that one explains or supports the other: "If we go outside, then we can play jump rope," and "I had a snack because I was hungry." They have a strong vocabulary, using words they have heard in stories or from adults. For example, in a discussion about pets, the child shares, "Some cats is mean. I know a mean one who got in a fight with my cat, and we took him to the veterinarian. He had an operation at the hospital and then went home. He's better now." Children at this level are able to retell stories with accurate details and also make connections to stories and ask questions. For example, when reading a book about construction (such as *Bam, Bam, Bam* by Eve Merriam), the child comments, "My dad does demolition. He knocks things down, and someone else builds them. That's a lot of work."

Ideas for Teaching and Documenting

Plan small-group and whole-class activities that provide opportunities for children to participate in discussions and respond to literature.

Read often one-on-one, in small groups, and as a class. Talk about stories following the reading.

Facilitate oral language through dramatic play by providing materials such as a telephone and by creating themes such as a grocery store or cobbler shop.

Ask open-ended and thought-provoking questions to provide children the opportunities to elaborate and share details. For example, say, "I see you built a tall structure with the blocks. How did you do that?" Or you might say, "What did you do yesterday in the snow when school was closed?"

Provide story starters in the dramatic play or block area to introduce new vocabulary. For example, tell children, "There are lots of dogs here. Let's see if we can create a dog-grooming business."

Introduce new vocabulary and listen for children to use it. For example, say, "You're using the rhythm sticks. When you go from soft to loud like that, it is called a crescendo. What else can you do with that instrument?"

Demonstrate for the children connections between books or events and personal experiences or other books. For example, when introducing *The Snowy Day* by Ezra Jack Keats, let the children know that it is a story about a little boy's experience in the snow. Share with the children an experience that you had in the snow and connect it to what happens to Peter in the story. Listen for connections they then make to their lives.

Provide props to act out or retell stories. For example, after reading *The Happy Farmer and His Dump Truck*, put the book in the block area with the dump trucks and plastic farm animals. Document what the children do and say.

Sample Anecdotes

Library Area

Marcus begins by telling the teacher that the author is Eric Carle. He points as he says the title: "Polar Bear, Polar Bear, what do you hear?" When he looks at the inside cover, he says, "These colors are the same in the story." Then he tells the teacher the story, pointing to the words as he reads, "Polar Bear, Polar Bear, what do you hear?" Then he moves his finger to the next page. "I hear a lion roaring in my ear." He reads each page, pointing to the words and saying them exactly how the page reads. He asks for help naming the flamingo and the sound it makes. He also asks, "What kind of snake is this?" Marcus then uses flannel board pieces to retell the story. He notices, "Where's the flamingo? It's not here, it must be missing." When he gets to the zookeeper, he says, "He has the word *zoo* on his hat—z-o-o."

Haley is looking at the book *I Love You All Day Long*. She holds the book upright and turns the pages one at a time, saying, "I love you all day long. Owen go to school. Him want mommy. He give hugs. The end!"

Story Time

Imani sits with her legs crossed and her eyes on the teacher through the morning routine and the reading of *Mouse Paint*. She responds, "That's cool. I did that with my mom when we were dyeing eggs. We put together red and blue to make purple! Can we do it here?"

Block Area

The class was studying buildings and had discussed the names of several buildings in New York that week. Lance points to a tall structure he built with the blocks and says to the teacher, "That's the Empire State Building; that's what it is. It's the tallest! It has 1-2-3-4-5-6-7-8-9-10-12-13!"

Snack Time

Jack is eating his apple slices. The teacher asks, "Jack, do you remember when we went to pick apples?" Jack shakes his head and points to the apples with a smile. The teacher responds, "What was your favorite part of the trip?" Jack looks down at the apples and points again. The teacher comments, "I liked it when we took a ride on that old rickety tractor. It was quite a bumpy ride out in the field! We picked red and green apples, like the one you're eating today." Jack smiles and continues eating his snack.

For Further Reading

Genishi, C., & Dyson, A. H. (2009). *Children, language, and literacy: Diverse learners in diverse times*. Washington, DC: National Association for the Education of Young Children and New York: Teachers College Press.

Roskos, K. A., Tabors, P. O., & Lenhart, L. A. (2009). *Oral language and early literacy in preschool: Talking, reading, and writing* (2nd ed.). Newark, DE: International Reading Association.

Item 8: Phonological Awareness
Domain: Language and Literacy

Research Base
Phonological awareness refers to one's degree of sensitivity to the sound structure of oral language—more specifically, one's ability to recognize, discriminate, and manipulate the sounds in one's language (Anthony & Francis, 2005). At the preschool level, phonological awareness consists of skills such as identifying and making oral rhymes and clapping out syllables (Strickland & Schickedanz, 2004). As children develop, they become increasingly sensitive to smaller and smaller parts of words. Children can detect or manipulate syllables before they can detect or manipulate onsets and rimes, and they can detect or manipulate onsets and rimes before they can detect or manipulate individual phonemes within intrasyllabic word units (Anthony & Francis, 2005).

Phonological awareness has strong scientifically based research support as a predictor of later literacy success (Snow, Burns, & Griffin, 1998; Strickland & Shanahan, 2004; NELP, 2008). Specifically, phonological awareness forms the basis of early decoding and spelling ability, which are correlated with later reading and spelling achievement. Teachers can support the development of phonological awareness early with participation in rhyming games, chants, and other language play (Neuman & Dickinson, 2001).

Standards
- Recognize separable and repeating sounds in spoken language
- Play with alliterative language
- Make up and chant rhymes
- Discriminate syllables in words
- Move to different patterns of beat and rhythm in music
- Participate in repeating rhymes and chants

Continuum Descriptions
Score 1
Children at this level respond to the beat of music by moving or clapping, but they are not able to engage in language play. They may recite only portions of chants and rhymes.

Score 3
Children at this level are engaging with chants, rhymes, and alliteration by repeating them after the teacher or another child. They are not making any rhymes or creating alliterative phrases on their own.

Score 5
Children at this level engage in true language play. They are able to create their own rhymes and alliteration in word play. (They create their own rhymes by generating a list of rhymes that can often be nonsensical. They are not necessarily able to provide a rhyme for a word presented by the teacher or another child.) For example, the child might say, "Miss Mary Mack…moves

mountains," "Hi Chelsea Welsea!" or "Fun, one, none, done, sun, mun." Children at this level can generally separate syllables in words with two or more syllables.

Ideas for Teaching and Documenting
Observe the children's participation with rhyming and chanting during music time. Look for children's independent wordplay.

When reading books with alliteration and rhyming, document how individual children respond when you pause to let them fill in the next word that completes the alliteration or rhyme.

Plan small-group activities that engage children in rhyming. Read stories that have alliteration or rhyming in them and bring it to the children's attention. Write a class rhyming book.

Play games during clean-up time that incorporate rhyming and alliteration. For example, you might say, "Wish, fish, dish. I see a dish in the kitchen area that needs to be put away." Or you could say, "I see that something that has the same beginning sound as Linda, Luis, and Lisa's name is out of place at the table. Who can find that and tell us what it is?"

Model language play. Say things like, "Good morning Jazzy Jonathan, Happy Hannah, and Anna Banana Fo Fanna!"

Sample Anecdotes
Small Group
Jonathan uses two fingers to glue and place each piece of macaroni on the paper plate during the art activity. He gives a piece of macaroni to Devondra and says, "I know a rhyme. Macaroni, jackaroni!" Devondra replies, "That's not a word." He says, "I know, but it still rhymes."

Library Area
Lisa says to the teacher, "Let's practice clapping the words in the classroom that I know. I know one—clipboard. Clip…board (two claps)."

Whole Class
Jesse sings "Miss Mary Mack" with his class during the morning activities.

Art Area
While Andy is painting in the art area, he sings, "In and out, clouds and houses, up and down, fish around, left and right, pencils and markers, dots and dirt, pots and parts, spaceships and hayships, hay and kay."

Transition
The teacher sings, "Willaby Wallaby Woo, an elephant sat on Dassondra!" Cassondra stands up, washes her hands, and sits at the table for snack.

For Further Reading
Bennett-Armistead, V. S., Moses, A. M., & Duke, N. K. (2005). *Literacy and the youngest learner: Best practices for educators of children from birth to 5.* Washington DC: National Association for the Education of Young Children.

Hohmann, M. (2002). *Fee, fie, phonemic awareness: 130 prereading activities for preschoolers.* Ypsilanti, MI: HighScope Press.

Item 9: Print Awareness
Domain: Language And Literacy

Research Base
Print knowledge is a broad category that is linked to later reading achievement (Strickland & Shanahan, 2004; Snow, Burns, & Griffin, 1998). Specifically, in order to make sense of print, one needs to understand directionality and comprehend the concept of word and the concept of letter (Strickland & Schickedanz, 2004). Children begin to notice that print carries meaning through experiences in print-rich environments. They begin to demonstrate this by first noticing prominent signs in their environment, such as signs for the grocery store or fast-food chains, then identifying common words in their environment, such as their own name or friends' names.

One of the strongest individual predictors of later reading achievement is letter identification. It is recommended that by the end of preschool, children can identify *at least* ten letters, especially those in his or her own name (Snow, Burns, & Griffin, 1998). However, it is cautioned that this letter learning should be provided within a larger literacy-rich context (Anderson, Hiebert, Scott, & Wilkinson, 1985).

Standards
- Recognize letters as a special category of visual graphics and understand that letters form words
- Identify letters, especially those in own name, family names, and environmental print
- Identify print such as classmates' names or signs and symbols in the environment
- Understand that print carries meaning

Continuum Descriptions
Score 1
Children at this level are able to identify some prominent environmental print, such as common restaurant signs or food labels. However, these children do not distinguish between the picture and the letters or words in texts. They can identify very few letters, if any (perhaps the first letter of their name and a sibling's name).

Score 3
Children at this level demonstrate an emerging awareness that print holds meaning. For example, they may ask the teacher to read something that doesn't have pictures. They do not follow along with their eyes or track the print with their fingers. They recognize some letters (fewer than seventeen), often beginning with those in their name. They recognize their name in the classroom, as well as some other environmental print in the classroom, such as center names. They may ask the teacher to write labels for their projects or artwork.

Score 5
Children at this level are aware of letters and print. They can identify many letters (seventeen or more) and notice them in the environment. They may make comments such as "That's my letter!" when noticing the first letter of their name in a story. Or they may say, "That stick looks like a Y." They recognize print in the environment, such as other children's names and stop

signs. Their eyes or fingers track the print to show their understanding that it is the print that is read in stories. They understand that print can be used for different functions, such as to convey a story in a book, give information like instructions for a board game, or send a message like a valentine. These children may ask for materials to write down a friend's phone number; they may "read" the menu in the dramatic play area to place their order; or they may write notes to their parents when they miss them.

Ideas for Teaching and Documenting

Observe children's interactions with letters and print. Watch and listen to the children "reading" stories. Record when children identify letters and notice environmental print on walks or in the classroom. Document when children ask you to label their work or take dictation.

Plan shared-writing activities for small groups in which you model writing in various forms (such as writing a thank-you letter, charting responses to a science activity, or recording a recipe) and talk about print and letters in context.

Use meaningful writing throughout the classroom and draw children's attention to it.

Provide writing materials, such as magnetic letters, letter stamps, pencils, and markers, for children to experiment with independently.

Read often and talk about the print.

Use books, such as *Rosie's Walk* by Pat Hutchins, that only have words on some pages or have no words at all. Discuss where you read and why.

Model writing for various purposes, such as making a birthday card, writing a shopping list for snacks for the classroom, or writing a class book.

Sample Anecdotes

Circle Time

Veronica looks at the message and raises her hand to ask, "How come you always put the big D for *Dear*? *Dear* is not a name like mine. Mine needs a big V because it have a name."

Library Area

Elise points to the F in the book *Flower Garden* and says, "F like Friday. Flower, Friday!" Then she points to the word *flamingo* and asks the teacher, "What does it say?" She then names the letters in the words *flamingo* and *zoo*.

Small Group

Evan tracks the print with his eyes, following the teacher's marker as she reads the board showing the students' responses. When her marker gets to Kevin's name, Evan shouts out "Kevin" before the teacher reads the name.

Chalkboard

Abril goes to the board and makes unidentifiable shapes. The teacher asks what she has made, and she says, "It's a flower."

Morning Arrival

Daniel arrives first. He picks up the basket of nametags and begins passing them out to the group. He provides all ten children who are present with the correct nametag.

Circle Time

Violet takes the teacher by the hand and says, "I want to show you something." She points to a sign on a paper behind the teacher's desk and says, "This is my name. Why do you put it here?" The teacher explains that it is the bus list, and it shows which bus she rides home. Violet says, "I see my name all over here. See, there it is where I sign in. There it is on the lunch menu. Now it's on the bus list! Why is it all over the place?"

For Further Reading

Strickland, D. S., & Schickedanz, J. A. (2009). *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness* (2nd ed.). Newark, DE: International Reading Association.

Neuman, S. B., Copple, C., & Bredekamp, S. (2000). *Learning to read and write: Developmentally appropriate practices for young children.* Washington, DC: National Association for the Education of Young Children.

Item 10: Writing
Domain: Language And Literacy

Research Base
Children need both the opportunity to engage in writing and the materials to do so in a meaningful way. Young children should freely experiment with various writing instruments, such as pencils, pens, markers, crayons, paints, and chalk, and various surfaces, such as paper, chalkboards, cement, or sand (Morrow, 1993; NRC, 1999; Mayer, 2007). Classrooms that encourage writing provide this variety of materials (Mayer, 2007) and include these writing materials around the room, not just in a writing center (Vukelich & Christie, 2004; Morrow, 1993). Given access to these materials to draw and scribble, most children will begin to bridge their oral and written worlds through drawing, scribbling, making lines, mock letters, actual letters, and various combinations of these in purposeful ways (Strickland & Riley-Ayers, 2007).

Standards
- Use a combination of drawing, dictating, and writing (scribbles, approximation of letters, or known letters) to communicate ideas
- Recognize that writing is a form of communication for a variety of purposes

Continuum Descriptions
Score 1
Writing for children at this level consists primarily of pictures or scribbles. Children do not communicate a message connected to the writing, but they may identify their work as "writing." For example, a child brings his paper with scribbles on it to his teacher and says, "I write." The teacher responds by asking what it says, to which the child responds, "I don't know—I can't read!"

Score 3
Children at this level work with adults to provide dictation mostly in the form of labels for pictures or writing. Children may be making marks that resemble letters. Children may be making an attempt to write their name.

Score 5
Children at this level are writing for meaning and stringing letters together. It is possible that there may be some connection to sound with the letters (i.e., invented spelling). For example, the child writes the letters L, V, X, M, M, and M in an identifiable way on a slip of paper. She brings it to the teacher and states, "This says, 'I love Mommy.'"

Ideas for Teaching and Documenting
Plan opportunities for children to write independently and in small groups.

Model writing for children through shared writing experiences, such as writing a morning message, charting children's responses, or writing a group fable after reading many fables.

Encourage children to write their name. This can be done through a sign-in sheet for attendance, by writing their name on their artwork, or by writing letters in a sand tray or on a whiteboard.

Provide writing materials throughout the classroom, such as notebooks, sticky notes, a waiter's pad, chalkboards, and whiteboards. Encourage children to use these materials, and keep track of the children's writing by collecting samples.

Encourage writing by responding positively to all writing attempts and by asking children to read their writing to you.

Take dictation for children and ask them to help you write some letters or words.

Sample Anecdotes

Dramatic Play

Sandra completes medical records for the stuffed cat.

Sandra: I wrote, "Cat, I love you." (She shows the teacher a paper that has several letter-like forms in various places around the page.)
Teacher: Was the cat sick?
Sandra: No, he was jumping on the chairs. That's why he went to the doctor. That's why he broke his paws.
Teacher: What did the doctor give him?
Sandra: Paper on his paw and medicine.
Teacher: What can the cat do to get better?
Sandra: Take the thing off, no more jumping on the chair, and give him a hug.

Writing Center

Desiree enters the writing center and says to the two other girls at the table, "Let's make books!" In her book, she draws some pictures and makes squiggly lines. She dictates the following to the teacher: "I eat hamburger and hot dogs and some sugars and some ice cream and lollipops."

Mandy writes her name on her painting using capital letters. She writes the letter M three times, then an A and a Y.

Snack Table

Aiden is at the snack table with the teacher.

Aiden: I don't like this juice. It tastes gross.
Teacher: It's mango peach juice. Have you ever had a mango or a peach?
Aiden: No. Are they good?
Teacher: Would you like to try one?
Aiden: Yes.
Teacher: Go grab a piece of paper, and we'll write a note to Ms. Kristen to pick up a mango and peach at the grocery store.

Aiden copies Ms. Kristen's name off of a list in the classroom. Then he writes: "M, S, PLESS." He reads it as "Ms. Kristen, mangos please."

For Further Reading

National Association for the Education of Young Children. (2007, January). *Young Children* (cluster articles on Writing).

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The Arts and Physical Development

Research Base

The Arts

For young children, creativity is not only a natural way to promote "academic" concepts (Lim, 2004), but it is also a natural way to help children process their lives in a meaningful way (Matlock & Hornstein, 2004). By allowing children to freely create and experiment with music, play, or artwork, they are able to integrate preceding learning and experiences with new ones (Matlock & Hornstein, 2004). These experiences are valuable, as they are the ones through which preschool children begin to identify themselves within the world around them (Hoffman, Kantner, Colbert, & Simes, 1991). By encouraging children to touch, feel, hear, see, and discover themselves as part of the aesthetic world, they are able to formulate ideas and make judgments about them (Hoffman et al., 1991). Most importantly, it is crucial to consider that the creative arts are a meaningful way for children to engage in cognitive and emotional experiences, as the arts involve the expression of both feelings and ideas (Hoffman et al., 1991).

Physical Development

During the preschool years, children develop gross motor control, including balance, spatial awareness, and stability. The development of motor skills allows children to explore, experience, and consequently learn from their environment (Malina, 2004). Gross motor skills are important for social, emotional, and physical development. Preschool children who have well-developed gross motor skills are able to play games with other children and are more likely to be included in group activities with their peers. Inclusion in such activities will lead to the development of friendships, while exclusion can lead to low self-esteem. Children who have gross motor problems may also develop health problems at a later age, as they may not engage in physical activity (Needlman, 1996; Poest, Williams, Witt, & Atwood, 1990).

The appearance of motor skills reflects the development and maturation of the brain and the rest of the nervous system (Adolph & Berger, 2006; Hughes, Noppe, & Noppe, 1996; Malina, 2004; Poest, Williams, Witt, & Atwood, 1990). While some variation does exist in preschoolers' motor abilities (due to sex, culture, etc.), failure to develop motor skills can indicate underlying neurological and/or developmental problems (Bayley & Espenschade, 1941; Malina, 2004). For example, toe walking in preschool children is linked to delays in speech and language (Needlman, 1996), whereas hopping and skipping in kindergarten are associated with achievement in first grade (Hughes, Noppe, & Noppe, 1996). Practice and instruction are also important for the development of new motor skills (Hughes, Noppe, & Noppe, 1996; Poest, Williams, Witt, & Atwood, 1990).

Preschool children should be able to use fine motor skills for academic and nonacademic tasks, and they should be provided with opportunities to practice these skills (Needlman, 1996). Fine motor skills are needed for kindergarten and for school readiness. They become more and more important as children advance in school (Marr, Cermak, Cohn, & Henderson, 2003). They are also necessary for communication, social interaction, academic tasks such as writing and pointing to words while reading, and nonacademic tasks such as eating and dressing (Hughes, Noppe, & Noppe, 1996; Marr, Cermak, Cohn, & Henderson, 2003). Fine motor skills are also predictive of school outcomes (Pianta & McCoy, 1997). Because fine motor skills reflect the

maturation of the nervous system, failure to develop these skills can reflect underlying neurological concerns (Malina, 2004; Poest, Williams, Witt, & Atwood, 1990).

Standards

- Develop gross motor control and balance
- Develop fine motor control
- Develop hand strength and eye-hand coordination
- Develop motor coordination and control of the body
- Participate in music activities
- Uses varying materials and techniques to make art creations

Sample Anecdotes

Outside

Mac climbs the ladder to the slide, alternating feet as he steps onto each rung. His head is titled down, and his eyes are watching his feet take each step. At the top of the slide he sits down and pushes off with his hands. He lands at the end of the slide on both feet.

Art and Writing

Kennedy paints at the easel using a thick paintbrush and watercolors. She cleans her brush off in between colors and says, "First red, then yellow, then purple, then black, then blue. Teacher, I made a rainbow. I gotta put my name on it." She carries her paper from the easel to the writing center. She makes marks on the paper, saying the letters in her name with each mark. (The letters are not identifiable.) She holds the crayon in her right hand with all of her fingers wrapped around it.

Block Area

Liam and Dylan build a circus in the block area. They build a large building, and Dylan tells Liam, "It's the tent!" Liam takes long blocks and lines them up alongside the building. "Look, it's the walking thing." He walks along the blocks, staying balanced for four steps, and then he steps down onto the carpet.

Table Toys

Preston builds a tower of blue and red inch cubes, alternating blue, red, blue, red. He says, "I got a pattern. Look—blue, red, blue, red. It goes so high." He builds until it falls over. He then takes the tower apart. He pulls the cubes off in groups of three to five at a time. He tries to place them into the container like this, but many won't fit. He attempts to pull them apart into smaller pieces, but he is not able to. He puts them down on the table and says to Mark, "You can have these."

For Further Reading

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Early Learning Scale

Class Record Form

Teachers _____ School _____ Score Period _____

STUDENT	Item 1 *Number & Num. Op.*	Item 2 *Class. & Alg. Think.*	Item 3 *Geometry & Meas.*	Item 4 *Scientific Inquiry*	Item 5 *Self-Reg.*	Item 6 *Play*	Item 7 *Oral Language*	Item 8 *Phon. Awareness*	Item 9 *Print Awareness*	Item 10 *Writing*

Early Learning Scale

Anecdote Record Form A

Child's Name _____ Teachers _____ School _____ Score Period _____

(1) Number and Numerical Operations	(2) Classification and Algebraic Thinking	(3) Geometry and Measurement

Early Learning Scale
Anecdote Record Form A

Child's Name _____ Teachers _____ School _____ Score Period _____

(4) Scientific Inquiry	(5) Self-Regulation	(6) Play

Early Learning Scale

Anecdote Record Form A

Child's Name _____ Teachers _____ School _____ Score Period _____

(7) Oral Language	(8) Phonological Awareness	(9) Print Awareness

Early Learning Scale

Anecdote Record Form A

Child's Name _____ Teachers _____ School _____ Score Period _____

(10) Writing	The Arts	Physical Development

Early Learning Scale

Anecdote Record Form B

Child's Name _____ Teachers _____ School _____ Score Period _____

	1 2 3 4 5 6 7 8 9 10 A PD		1 2 3 4 5 6 7 8 9 10 A PD
	1 2 3 4 5 6 7 8 9 10 A PD		1 2 3 4 5 6 7 8 9 10 A PD

1: Number and Numerical Operations, 2: Classification and Algebraic Thinking, 3: Geometry and Measurement, 4: Scientific Inquiry, 5: Self-Regulation, 6: Play, 7: Oral Language, 8: Phonological Awareness, 9: Print Awareness, 10: Writing, A: Arts, PD: Physical Development

Early Learning Scale: Score Record Form

Child's Name _____ Teachers _____ School _____

- Examine the evidence for each item. Then place the evidence on the continuum for each strand at 1, 3, or 5 based on the indicators for each score.
- Examine the score for each strand, and assign an appropriate score for the item as a whole.
  - If the scores for the strands are equivalent or if there is only one strand in the item, the overall score for the item is the same.
  - If the scores for the strands differ, use the middle score (not the average) as the overall score for the item.
  -

Score Period	1	2	3
1a. Functional Counting			
1b. Numerical Operations			
1c. Written Numbers			
1. NUMBER AND NUMERICAL OPERATIONS			
2a. Classification			
2b. Algebraic Thinking			
2. CLASSIFICATION AND AGLEBRAIC THINKING			
3a. Identifying and Using Shapes			
3b. Measurement			
3. GEOMETRY AND MEASUREMENT			
4a. Observation and Reporting			
4b. Prediction			
4c. Investigation			

Score Period	1	2	3
5a. Independent Behavior			
5b. Regulation of Emotions and Behavior			
5c. Prosocial Behavior			
5d. Social Problem Solving			
5. SELF-REGULATION			
6a. Quality and Attributes of Engagement and Exploration			
6b. Quality and Attributes of Cooperative Play			
6c. Quality and Attributes of Sociodramatic Play			
6. PLAY			

Score Period	1	2	3
7a. Speaking			
7b. Story Retelling			
7. ORAL LANGUAGE			
8. Language Manipulation			
8. PHONOLOGICAL AWARENESS			
9a. Alphabetic Awareness			
9b. Print Knowledge			
9. PRINT AWARENESS			
10a. Composing			
10b. Production			
10. WRITING			

4. SCIENTIFIC INQUIRY						

Early Learning Scale: Data Collection Examination

Use this form throughout the score period for examination of student evidence. Place students' names next to the item(s) for which you need to collect more evidence for the child's folio. You should complete this form several times within the score period.

Strand	Students
1a. Functional Counting	
1b. Numerical Operations	
1c. Written Numbers	
2a. Classification	
2b. Algebraic Thinking	
3a. Identifying and Using Shapes	
3b. Measurement	
4a. Observing and Reporting	
4b. Prediction	
4c. Investigation	
5a. Independent Behavior	
5b. Regulation of Emotions and Behavior	
5c. Prosocial Behavior	
5d. Social Problem Solving	
6a. Quality and Attributes of Engagement and Exploration	
6b. Quality and Attributes of Cooperative Play	
6c. Quality and Attributes of Sociodramatic Play	
7a. Speaking	
7b. Story Retelling	
8. Language Manipulation	
9a. Alphabetic Awareness	
9b. Print Knowledge	

10a. Composing	
10b. Production	

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