

Introduction

Stepping Stones to Literacy is a scientifically based (i.e., a randomized experimental study used to validate its effectiveness) early literacy intervention. The program includes the critical properties of effective early literacy interventions identified by the NICHD's National Reading Panel (2000). Stepping Stones helps children to master five pivotal early literacy skill sets to ensure that they benefit from beginning reading instruction. The five pivotal early literacy skills and associated activities include:

1. **Listening.** Listening instructional activities teach children to focus on specific sounds and to understand that sounds: (a) Are associated with symbols; (b) Can be put together in a sequence; and (c) Can be taken apart.
2. **Conventions.** Conventions instructional activities teach children to identify letter names and convey that language has meaning (i.e., sentences tell stories). Additionally, the letter identification instructional activities are designed to build children's serial processing skills (see #5).
3. **Phonological awareness.** Phonological awareness instructional activities teach children to be consciously aware of the linguistic structure of the largest units of oral language (i.e., words, syllables).
4. **Phonemic awareness.** Phonemic awareness instructional activities teach children to be consciously sensitive to the smallest units of oral language (i.e., phonemes).
5. **Serial processing.** Serial processing instructional activities build children's ability to process information in a left-to-right format. Serial processing—identifying and naming different patterns of given stimuli—is critical to achieving automaticity with the code or reading fluency.

Effectiveness Research

Stepping Stones to Literacy was developed and validated with 38 young children at risk for reading failure due to both phonological and behavioral deficits. The children were randomly assigned to either an experimental or a comparison condition. Children in the comparison condition received the standard early literacy instruction provided in the classroom. Children in the experimental condition received Stepping Stones in addition to the standard early literacy instruction provided in the classroom. The dependent measures included:

- Comprehensive Test of Phonological Processing (CTOPP) (Wagner, Torgesen & Rashotte, 1999) Phonological Awareness and Rapid Naming clusters.

- Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (Kaminski & Good, 1996) Initial Sounds Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency probes.

Study results indicated that children in the experimental condition made statistically and educationally significant gains on both the CTOPP standardized measure and DIBELS curriculum-based indicators of early literacy skills. The results of Stepping Stones on children’s phonological awareness and processing skills are presented in Table 1. All of the obtained effect sizes were consistently large across the standardized measure and curriculum-based indicators. The percentages of children in the comparison condition whose performance was below the mean of those in the experimental condition ranged from 76 percent to 92 percent.

Table 1. Comparison Condition vs. Experimental Condition Results

Dependent Measures	Effect Size	% of Children in the Comparison Condition Below the Mean of Those in the Experimental Condition
CTOPP		
Phonological Awareness	1.1	86
Rapid Naming	1.4	92
DIBELS		
Initial Sounds Fluency	1.5	94
Letter Naming Fluency	.70	76
Phoneme Segmentation Fluency	.86	80
Nonsense Word Fluency	1.4	92

Selecting Children for the Stepping Stones Program

Stepping Stones to Literacy was designed to serve older preschool and kindergarten children who lack pivotal early literacy skills. These are children who do not know their letter names, lack phonological awareness skills (e.g., cannot rhyme), and are unable to blend and segment phonemes. We would advise that, at a minimum, children in the bottom 30 percent of the classroom be tested on these skills and provided Stepping Stones to Literacy.

Depending on a school's resources, we recommend that a combination of the following methods be used to determine children's literacy levels:

1. Classroom instructor prediction. Instructors can make relatively accurate predictions after the third week of school about which children have early literacy deficits. Instructors simply rank-order children in terms of their early literacy skills at school entry.
2. Instructor assessments. Instructors can use existing early literacy assessments to identify children with early literacy deficits. These assessments might also include the Title I and special education teacher assessments.
3. *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS). Teachers can use the Initial Sounds Fluency (ISF), Letter Naming Fluency (LNF), Phonemic Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF) within DIBELS to identify children with early literacy deficits. The established benchmarks for identifying early literacy deficits are detailed in Table 2.

Table 2. DIBELS Kindergarten Benchmarks

Measure	Beginning of Year		Middle of Year		End of Year	
	Performance	Status	Performance	Status	Criteria	Status
Initial Sounds Fluency	ISF < 4 4 ≤ ISF < 8 ISF ≥ 8	At Risk Some Risk Low Risk	ISF < 10 10 ≤ ISF < 25 ISF ≥ 25	Deficit Emerging Established		
Letter Naming Fluency	LNF < 2 2 ≤ LNF < 8 LNF ≥ 8	At Risk Some Risk Low Risk	LNF < 15 15 ≤ LNF < 27 LNF ≥ 27	At Risk Some Risk Low Risk	LNF < 29 29 ≤ LNF < 40 LNF ≥ 40	At Risk Some Risk Low Risk
Phonemic Segmentation Fluency			PSF < 7 7 ≤ PSF < 18 PSF ≥ 18	At Risk Some Risk Low Risk	PSF < 10 10 ≤ PSF < 35 PSF ≥ 35	Deficit Emerging Established
Nonsense Word Fluency			NWF < 5 5 ≤ NWF < 13 NWF ≥ 13	At Risk Some Risk Low Risk	NWF < 15 15 ≤ NWF < 25 NWF ≥ 25	At Risk Some Risk Low Risk

Used with permission from *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS).
Web site: (<http://dibels.uoregon.edu>)

Lesson Format

Stepping Stones to Literacy consists of one Lesson Book, containing Lessons 1–25, and a section on Serial Processing.

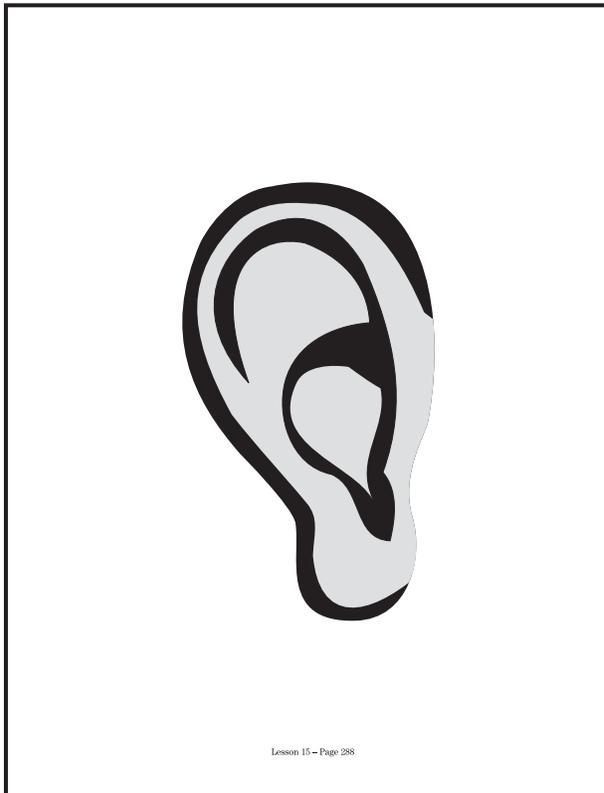
The Serial Processing section consists of ten instructional activities that focus on serial processing of sets of colors, numbers, and objects.

During each daily lesson of 10–20 minutes, children are guided through a set of instructional activities designed to promote the five pivotal early literacy skills (listening, conventions, phonological awareness, phonemic awareness, and serial processing). The instructional formats in the Lesson Book are held constant across the 25 lessons and are designed to guide the instructor through each of the instructional activities as follows:

- A nursery rhyme is used to introduce each lesson.
- Each lesson consists of four to six short activities.
- Teaching prompts for the instructor are presented on one side of the easel-type book, and associated instructional activities/prompts for the children are presented on the other side (see Figure 1).
- The instructor presents the activities to the children in a model-lead-test instructional format (described in the “Instructional Presentation Procedures” section, following).

Figure 1. Examples of Lesson Format

CHILDREN'S SIDE OF LESSON



INSTRUCTOR'S SIDE OF LESSON

Phoneme Deletion



1. "Listen carefully I'm going to say a word. Then I'll say the word again without the first sound."

"Escuchen con cuidado. Voy a decir una palabra. Luego diré la palabra otra vez sin el primer sonido."

Model the pause between the first and last sounds of the word. Repeat the last sound of the word.

2. "Now it's your turn. I'm going to say a word slowly and you tell me the word without the first sound."

"Ahora es su turno. Voy a decir una palabra despacio y ustedes me dicen la palabra sin el primer sonido."

Repeat two to three times.

m/an

f/ear

l/and

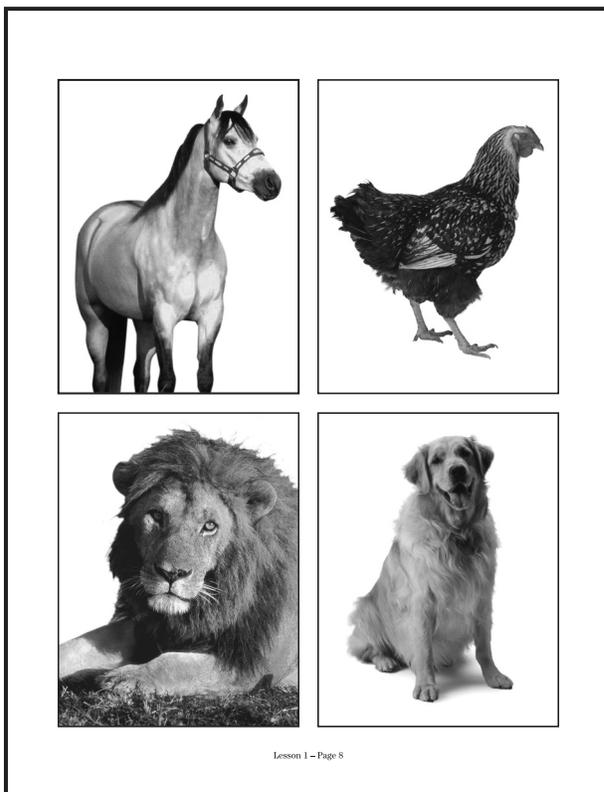
f/ill

m/ask

M/ax

m/ill

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Sound Relationships

1. "I'm going to make some animal sounds. You point to the picture of the animal that makes the sound."

"Voy a hacer algunos sonidos de animales. Señalen la ilustración del animal que hace ese sonido."

Model and practice animal sounds with children.

2. "Now I will point to the picture, and you make the animal sound."

"Ahora yo señalaré la foto y ustedes harán el sonido del animal."

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Instructional Activities

The instructional activities in the Lesson Book gradually change with each successive lesson. This ensures that the lessons proceed in a very predictable manner for both the instructor and the children. Instructional activities for the five pivotal early literacy skills are detailed in this section. The scope and sequence for Stepping Stones to Literacy (Table 3) follows the “Phonemic Awareness” section.

Introductory Rhyme

Each lesson begins with an introductory rhyme. The rhyme serves as a starter activity and is incorporated into some of the instructional activities throughout the lessons. The instructor and the children say the rhyme together.

Listening

Five instructional activities are used to teach children a set of pivotal listening skills necessary for them to fully benefit from instructional activities:

1. **Sounds in isolation.** This instructional activity (Lessons 1–5) teaches children to listen for, and direct their attention to, specific sounds. Children are instructed to listen for the name of an animal articulated by the instructor within the context of a nursery rhyme.
2. **Sound relationships.** This instructional activity (Lessons 1–5) teaches children that sounds are associated with symbols. Children are instructed to identify the sound associated with the picture of an animal and to identify the picture of the animal associated with its sound.
3. **Sounds in sequence.** This instructional activity (Lessons 6–10) teaches children that sounds can occur in different sequences. Children are instructed to identify the sequence of sounds articulated by the instructor.
4. **Sound expectations.** This instructional activity (Lessons 6–10) teaches children to listen for, and direct their attention to, specific sounds. Children are instructed to identify unexpected words articulated by the instructor within the context of a nursery rhyme.
5. **Omit a sound.** This instructional activity (Lessons 11–14) teaches children that the sequence of sounds can be changed. Children are instructed to identify a specific environmental sound (e.g., a cough, a barking dog) that is omitted from a sequence of sounds articulated by the instructor.

Conventions

Five instructional activities are used to teach children pivotal conventional early literacy skills:

1. **Sentence recognition.** This instructional activity (Lessons 1–6) teaches children to listen for the meaning embedded within sentences. Children are instructed to identify what is happening in each sentence of a nursery rhyme articulated by the instructor.
2. **Sentence generation.** This instructional activity (Lessons 6–10) teaches children to generate different meanings that are conveyed in pictures. Children are instructed to generate a description of what is happening in a picture.
3. **Letter names.** This instructional activity (Lessons 1–25) teaches children to identify capital and lowercase letter names. Children are instructed to point and say letter names presented in a left-to-right format.
4. **Letter name practice.** This instructional activity (Lessons 4–25) provides children with an immediate review of letter names and serial processing practice. Children are instructed to point to and say as many letter names, presented in a left-to-right format, as they can in one minute. The Letter Name Fluency Tracking Form for documenting rates is presented in the back of this manual.
5. **Letter name cumulative review.** This instructional activity (Lessons 11, 15, 19–20, 23–25) provides children intermittent review of letter names and serial processing practice. Children are instructed to point to and say as many letter names, presented in a left-to-right format, as they can in one minute. The Cumulative Letter Name Fluency Tracking Form for documenting rates is presented in the back of this manual.

Phonological Awareness

Five instructional activities are used to teach children to be consciously aware of the linguistic structure of the largest units of oral language (i.e., words, syllables):

1. **Rhyme identification.** This instructional activity (Lessons 1–7) teaches children to listen for and identify rhyming words in context. Children are instructed to identify words that rhyme with one another in the context of a nursery rhyme.
2. **Rhyme generation.** This instructional activity (Lessons 8–14) teaches children to generate rhyming words. Children are instructed to generate several words that rhyme with a word articulated by the instructor.

3. **Word segmentation.** This instructional activity (Lessons 11–14) teaches children to segment words within sentences. Children are instructed to clap every time they hear a word in a nursery rhyme articulated by the instructor.
4. **Syllable blending.** This instructional activity (Lessons 12–14) teaches children to blend syllables into a word. Children are instructed to generate the word associated with two or more blended syllables articulated by the instructor.
5. **Onset-rime blending.** This instructional activity (Lessons 15–17) teaches children to blend the initial sound with the rest of the word. Children are instructed to generate the word associated with the initial sound and the rest of the word articulated by the instructor.

Phonemic Awareness

Four instructional activities are used to teach children to be consciously aware of the smallest units of oral language (i.e., phonemes):

1. **Phoneme deletion.** This instructional activity (Lessons 15–18) teaches children to segment the initial phoneme in a word. Children are instructed to generate the remaining part of a word after the initial phoneme has been deleted from a word articulated by the instructor.
2. **Phoneme identification.** This instructional activity (Lessons 18–21) teaches children to identify phonemes within a word. Children are instructed to identify each phoneme within a word articulated by the instructor.
3. **Phoneme segmentation.** This instructional activity (Lessons 15–25) teaches children to segment phonemes within a word. Children are instructed to generate the initial phoneme, the initial and final phonemes, or the initial, medial, and final phonemes within a word articulated by the instructor.
4. **Phoneme change.** This instructional activity (Lessons 19–25) teaches children to change phonemes within a word. Children are instructed to generate a new word by changing the initial, medial, or final phoneme within a word articulated by the instructor.

Table 3. Scope and Sequence

Instructional Activity	Lessons																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Listening																										
(Instructional activities designed to teach children to direct their attention toward specific details [e.g., sequence] using environmental sounds.)																										
Sounds in Isolation	X	X	X	X	X																					
Sound Relationships	X	X	X	X	X																					
Sounds in Sequence						X	X	X	X																	
Sound Expectations						X	X	X	X																	
Omit a Sound										X	X	X	X													
Conventions																										
(Instructional activities designed to teach children the basic conventions of written language.)																										
Sentence Recognition	X	X	X	X	X	X																				
Sentence Generation						X	X	X	X																	
Letter Names	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Letter Name Practice						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Letter Name Cumulative Review										X					X						X				X	X
Phonological Awareness																										
(Instructional activities designed to enhance children's awareness of the largest units of oral language [i.e., words, syllables].)																										
Rhyme Identification	X	X	X	X	X	X	X																			
Rhyme Generation							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Word Segmentation										X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Syllable Blending											X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Onset-Rime Blending															X	X	X	X	X	X	X	X	X	X	X	X
Phonemic Awareness																										
(Instructional activities designed to enhance children's awareness of the smallest units of oral language [i.e., phonemes].)																										
Phoneme Deletion															X	X	X	X	X	X	X	X	X	X	X	X
Phoneme Identification																										
Phoneme Segmentation																										
Initial															X	X	X	X	X	X	X	X	X	X	X	X
Initial and Final																						X	X	X	X	X
Initial, Medial, and Final																							X	X	X	X
Phoneme Change																										
Initial																					X	X	X	X	X	X
Final																										
Medial																										

Serial Processing Section

An identical instructional format is used throughout the Serial Processing section, at the end of the Lesson Book. These ten activities enhance children’s serial processing skills. At least one of these activities should be incorporated into each daily lesson. Children are presented with an array of visually depicted, randomly ordered known stimuli (series of colors, numbers, and known objects) that represent linguistic information. Children are instructed to point to and say as many of the stimuli names, presented in a left-to-right format, as they can in one minute. Children repeat the same stimuli several times within the same series group. (Pre-teach the stimuli if children are unfamiliar with them.) The Serial Processing Fluency Tracking Form for documenting serial processing rates is presented in the back of this manual.

Instructional Format

Whatever instructional format is used—small group or one-to-one—the effectiveness of imparting early literacy skills should be the primary consideration. A small group instructional format can be used with units of two–four children who do not have significant early literacy skill deficits or accompanying behavioral problems (e.g., inattention). In this teaching format, a group signal is used to cue children to respond in unison (choral response). Skill mastery is then checked by asking individual children to respond.

A one-to-one instructional format should be used for those children with significant early literacy skill deficits. This format is necessary to provide children with additional support (i.e., vary the level of task demands and support in response to the child’s competence) and opportunities to respond to or practice the skills covered within each lesson. Furthermore, instructors can adjust their pacing within (i.e., provide additional practice) as well as across lessons (i.e., repeat lessons) to ensure that children acquire the literacy skills. We recommend that nonprofessionals use the one-to-one instructional format, unless they have been trained to work with groups of children. The one-to-one instructional format is much easier to implement than the small group format.

Instructional Presentation Procedures

Model-lead-test instructional presentation procedures are used across all of the instructional activities. This procedure is designed to serve as a bridge between the skill modeled by the instructor and the independent practice of the skill by the child.

- The instructor should begin each instructional activity by modeling the pivotal early literacy skill (model).

- Children are then asked to replicate the modeled example (lead).
- Finally, children practice the new skill independently with the practice examples (test).

Instructors should monitor whether children are successfully progressing from skill acquisition (children make a few errors) to skill consolidation (children have fully mastered the skill). This progression typically occurs naturally across each of the instructional activities. It may be necessary, however, to give children more support by providing them with multiple models and by repeating lessons to ensure that they achieve skill consolidation. The Skill Tracking Form for monitoring children’s progression from skill acquisition to skill consolidation is presented in the back of this manual.

Error-Correction Procedures

Systematic error-correction procedures are used to provide children with a safety net. The error-correction procedures include two components: error detection and reteaching. It is critical that the instructor detect errors and reteach skills when appropriate. The instructor prompts children to “try again” when they make careless errors or need encouragement during the instructional activities. If children are unable to respond independently, the instructor should use the model-lead-test instructional presentation procedures to repeat the lesson.

Keys to Children’s Success

Based on our work in training professionals and nonprofessionals, we have found Stepping Stones to Literacy to be most effective when the following conditions are met:

1. Instructors follow the lesson formats and instruct children every day; they do not improvise, leave out parts of lessons, or skip days.
2. Instructors are highly engaging and positive.
3. Instructors are well-organized, use a brisk pace, and provide children encouragement and feedback throughout the lessons.
4. Instructors get to know the children’s instructional needs and respond accordingly by:
 - adjusting the level of scaffolding or support they provide to children (i.e., vary the level of task demands in response to the child’s competence);
 - creating opportunities for children to respond to or practice the skills covered within each lesson; and

- adjusting their pacing within, as well as across, lessons to ensure that children acquire the skills.
5. Instructors monitor children’s strengths and weaknesses by carefully observing them and tracking their performance over time (see Skill Tracking Form).

A Treatment Fidelity Self-Evaluation Form is presented in the back of this manual. We recommend that instructors complete the form on a daily basis to ensure that they are following the lesson formats as prescribed.

A Note About the Spanish Instructional Prompts

The Lesson Book contains instructional prompts for *Stepping Stones to Literacy in Spanish* as well as the English prompts. The Spanish instructional prompts can be used with children who speak little or no English and children who are marginally bilingual who have recently come from Spanish-speaking countries. The prompts will build the English prereading skills of Spanish-speaking children by ensuring that they understand the response requirements for each of the instructional activities in *Stepping Stones*. All of the prompts for each of the 25 lessons and the serial processing activities are presented in sequence in the Lesson Book.

Use the following instructional sequence (i.e., PEER) until the child fully understands the English instructional prompts.

- **Paired prompts.** Use the Spanish and English instructional prompts together. The goal is to teach children to understand the English instructional prompts.
- **Evaluate** the child’s understanding of the English instructional prompts and associated response requirements for the instructional activities by asking them what they need to do.
- **Expand** and clarify the child’s response by rephrasing and adding information to it if necessary.
- **Repeat** the prompts to make sure the child has learned from the expansion and then present the instructional activity.

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