

PALS and Reading First

This document provides a brief overview of the Phonological Awareness Literacy Screening (PALS) as it relates to the Reading First requirements spelled out in the *No Child Left Behind Act*. As such, we provide here only a brief overview of the PALS assessment tools. Complete and detailed information on the history, development, and technical adequacy of PALS is available in the PALS-K Technical Reference and the PALS 1-3 Technical Reference. Additional information on the administration and scoring of PALS is available in the PALS-K Administration and Scoring Guide and the PALS 1-3 Administration and Scoring Guide.

Background

PALS. The Phonological Awareness Literacy Screening (PALS) has been used as the state-provided screening tool for Virginia's Early Intervention Reading Initiative (EIRI) since legislation establishing the EIRI was passed in 1997 by the Virginia General Assembly. Developed as a measure of children's knowledge of important literacy fundamentals, PALS aligns with Virginia's Standards of Learning (SOL) for English. The original PALS instrument was designed for use in kindergarten and first grade, but was expanded into separate PALS-K and PALS 1-3 instruments in response to the expansion of the EIRI to kindergarten through third grade in 2000. The specific purposes of PALS are to (a) **screen** and identify children who are relatively behind in their acquisition of important literacy fundamentals, and (b) provide teachers with **diagnostic** information that allows them to match reading instruction to specific literacy needs. Students not meeting grade-level criteria are provided with additional reading instruction.

PALS-K. PALS-K is designed for kindergarten students and consists of seven subtasks. Certain subtask scores are combined to create a summed score, which is used to identify students for additional instruction. PALS-K tasks include:

- Group Rhyme (Screening)
- Individual Rhyme (Diagnostic)
- Group Beginning Sound (Screening)
- Individual Beginning Sound (Diagnostic)
- Alphabet Recognition (Screening and diagnostic)
- Letter Sounds (Screening and diagnostic)
- Spelling (Screening and diagnostic)
- Concept of Word (Diagnostic)
- Word Recognition in Isolation (diagnostic) (optional)

PALS 1-3. PALS 1-3, for first through third grades, is a leveled instrument that is used to (a) **screen** and identify students in need of additional instruction based on their Entry Level task scores, and (b) to **diagnose** specific skill deficits in students whose Entry Level scores do not meet grade level benchmarks, and who thus

proceed to subsequent diagnostic levels of PALS (Level B tasks, and Level C tasks)

Entry Level (Screening)

- Spelling
- Word Recognition in Isolation
- Letter Sounds (in Fall of First grade only)

Level A: Oral Reading in Context (Screening & Diagnostic)

- Accuracy
- Fluency
- Comprehension

Level B: Alphabets (Diagnostic)

- Alphabet Recognition
- Letter Sounds
- Concept of Word

Level C: Phonemic Awareness (Diagnostic)

- Blending
- Sound-to-letter (or segmenting)

Reading First. A part of the *No Child Left Behind Act of 2001*, Reading First requires that participating states assess students in reading, monitor students' progress, and determine the extent to which goals for literacy are met. Specifically, states are required to use assessment tools that accomplish each of four purposes of assessment: (a) screening, (b) diagnosis, (c) progress monitoring, and (d) outcomes assessment. Moreover, states are required to assess students in five core reading areas: (a) phonemic awareness, (b) phonics, (c) fluency, (d) vocabulary, and (e) comprehension.

We address each of these areas or domains. First we describe the use of PALS for each of the four assessment purposes; then we provide a brief overview of the PALS instruments with particular attention to the ways in which the five essential components of reading are addressed.

How does PALS achieve each of the four purposes of assessment spelled out in Reading First?

In this section we describe the use of PALS for different assessment purposes spelled out in Reading First legislation: screening, diagnosis, progress monitoring, and outcomes assessment. For each assessment purpose, we also delineate exactly what PALS provides for teachers.

Screening. PALS was developed with the specific charge of helping to identify children who are in need of additional instruction in key literacy fundamentals. PALS remains the

state-provided screening tool for Virginia’s Early Intervention Reading Initiative, and is used by 98% of school districts in Virginia on a voluntary basis to identify students who are to receive additional reading instruction through the EIRI. Five years of statewide data collection with children in grades K-3 in Virginia have allowed the refinement of the summed score benchmarks used to identify students in need of additional instruction.

Because the Virginia Standards of Learning (SOL) has become a standard outcome measure and indicator of proficiency for students in Virginia public schools, we examined the relationship between PALS scores and SOL performance. We conducted a discriminant analysis on a sample of 799 students across three districts for whom we had SOL scores and PALS scores from fall of third grade, fall of second grade, and fall of kindergarten. That is, in this analysis we used a linear combination of PALS scores from multiple screenings to predict whether students would pass the 3rd grade English SOL. The combination of PALS scores produced a discriminant function that accurately classified 82% of students as *pass* or *fail* on the SOL.

As a screening tool, what does PALS provide? PALS allows schools to identify students who are at risk of reading failure because they are behind grade-level expectations in important literacy fundamentals. Benchmarks have been established for PALS-K and for PALS 1-3 and students failing to meet these benchmarks are clearly below grade level expectation and thus at risk for reading failure. In Virginia, students failing to meet the benchmarks for PALS-K and PALS 1-3 are provided with additional instruction under the EIRI.

Diagnosis. PALS was created with the express purposes of both screening to identify students in need of additional instruction, and also providing explicit diagnostic information that teachers could use to guide their instruction. For example, on PALS 1-3, students who do not meet the entry-level criterion are further assessed in Levels B and C: Alphabetics and Phonemic Awareness. In addition, an instructional reading level is established for each student, as well as an instructional level for spelling/phonics knowledge. For PALS-K, students who do not meet the criteria for the two group-administered phonological awareness tasks are further assessed for their awareness of sounds in an individual, one-on-one format. All tasks on PALS-K provide diagnostic information with regard to the knowledge students have about important literacy fundamentals (i.e., specific letters and letter sounds).

As a diagnostic tool, what does PALS provide? PALS provides teachers with a profile of the areas in which particular students are in need of additional instruction. Thus, PALS does not merely designate a child as ‘at risk,’ but also provides teachers with explicit information about where to begin instruction and in what areas individual children need further help. For example, in addition to identifying students who are at risk, PALS also:

- Groups students by instructional reading level after word list and oral reading passage scores are entered,

- Groups students by spelling/phonics knowledge when phonics/spelling feature scores are entered, and
- Links to instructional activities within the PALS website.

Progress Monitoring. The PALS instruments are designed to identify students in need of additional instruction, and for those identified, it is expected that they will be rescreened during the next screening window. On PALS 1-3, progress is monitored by growth in reading levels across the year and growth in phonics/spelling knowledge. On PALS-K, progress is monitored by increases in the phonological awareness scores and by growth in the number of letters recognized, the number of letter sounds pronounced, the number of phonemes represented in the spelling task, and increases in the concept of word score.

As a progress monitoring tool, what does PALS provide? PALS provides at least two clear indicators of progress over time. PALS allows teachers to monitor changes in students' reading levels (based on their scores on Word Recognition in Isolation and Oral Reading in Context tasks) over time, and also provides evidence of growth in the spelling and phonics features children demonstrate over time.

Outcomes assessment. Given its primary function as a screening and diagnostic tool, the use of PALS as an assessment of outcomes is probably not justified. PALS is designed to identify students in need of additional help in acquiring important literacy fundamentals, and as such has been examined primarily as a predictor of outcomes, rather than a measure of outcomes. Indeed, Virginia's statewide assessment, the Standards of Learning, has become the primary means by which students' success is documented.

Essential components of reading instruction	Assessment Purpose			
	Screening	Diagnosis	Progress monitoring	Outcomes assessment
Phonemic Awareness	X	X	X	--
Phonics	X	X	X	--
Fluency	X	X	X	--
Vocabulary	X	X	X	--
Comprehension	X	X	X	--

How does PALS focus on the essential components of reading?

Since its inception, PALS has focused on not only identifying children in need of additional instruction beyond that provided to typically developing readers, but also on providing teachers with specific information to guide their instruction. As such, PALS tasks were designed specifically to cover the important components of early literacy – components that were also identified in Reading First legislation. We provide a brief description of how PALS addresses each component.

Phonemic Awareness. Phonemic awareness is assessed by three tasks in PALS-K and by two tasks in PALS 1-3. In PALS-K, the Rhyme Awareness task assesses children’s ability to match orally presented rhymes that are cued by pictures. The student circles the picture that rhymes with each item. Phonemic awareness is more specifically assessed with two additional tasks: Beginning Sound Awareness and a Spelling measure scored by the number of phonemes represented. The format of the Beginning Sound Awareness task is similar to the Rhyme Awareness task; that is, students circle the picture that has the same beginning sound as the targeted item. For the Spelling task, kindergartners are asked to spell five consonant-vowel-consonant (CVC) words, and their spelling attempts are scored by the number of phonemes represented. Phonetically accurate letter substitutions are permitted so that a student representing the /s/ phoneme with a c, for example, would be given credit for that phoneme.

In PALS 1-3, phonemic awareness is assessed with two phoneme awareness tasks: Blending and Sound-to-Letter. In the Blending subtask, students are asked to blend individual phonemes together to come up with a word (e.g., /c/ + /a/ + /t/ = cat). Items move from two-phoneme words to four-phoneme words. The Sound-to-Letter task requires phoneme segmentation in addition to knowledge of letter sounds. The teacher says a word (e.g. *map*); the student segments various phonemes within that word and tells the teacher the letter that represents each phoneme. Sound-to-Letter items assess students’ ability to segment the beginning, ending, and medial phoneme.

Phonics. Children’s knowledge of phonics is assessed by two tasks on both PALS-K and PALS 1-3: Spelling and Letter Sounds. Kindergartners are asked to spell five CVC words. Teachers score students' spelling attempts by the number of phonemes represented. Phonetically accurate substitutions are accepted. Students in grades 1 through 3 are asked to spell lists of words representing phonics features that should have been acquired to be successful at each grade level. Teachers score spellings by specific phonics features represented. For example, students who correctly represent a consonant blend would get credit for its presence even if they misspelled other parts of the word.

The second phonics task is Letter Sound knowledge. On PALS-K, all kindergartners are assessed for their knowledge of letter sounds. On PALS 1-3, all first graders are assessed for their knowledge of letter sounds in the fall. Letter Sound knowledge is part of the diagnostic assessment for all first, second and third graders taking PALS 1-3.

Fluency. Children’s oral reading fluency is assessed by one task on PALS-K and one task scored for 3 aspects of reading fluency on PALS 1-3. PALS-K is used to assesses the accuracy and fluency of students’ ability to demonstrate one-to-one correspondence between words recited from a memorized nursery rhyme and those same words printed in a four-line stanza in the Concept of Word task. PALS 1-3 is used to assess students’ oral reading fluency through the Oral Reading in Context task (ORC). The ORC task yields three measures of oral reading fluency: (a) oral reading accuracy, (b) phrasing, intonation, and expression, and (c) reading rate.

Vocabulary. Vocabulary is assessed in both PALS-K and PALS 1-3 using the Word Recognition in Isolation task. Word Recognition in Isolation assesses children’s recognition of core reading vocabulary in a series of graded word lists. Three word lists are provided for PALS-K, and these correspond to the core reading vocabulary encountered at the beginning, middle, and end of grade one. Three additional word lists are provided for PALS 1-3.

Comprehension. Comprehension is assessed in PALS 1-3 following the Oral Reading in Context task. After reading a passage out loud, students answer a set of comprehension questions about that passage. The comprehension questions are in a multiple-choice format. Teachers read the questions and the answer options aloud to students who read on a primer or first-grade reading level. Students reading on a second- or third-grade reading level read and answer the comprehension questions independently.

Does PALS have evidence of reliability and validity?

Extensive and ongoing pilot testing and analyses of statewide data each year provide substantial evidence of the reliability and validity of PALS. A brief overview of the key findings from reliability and validity studies is provided here and summarized in the accompanying tables at the end of this document. For a complete discussion of the technical adequacy of PALS, refer to the PALS-K Technical Reference and the PALS 1-3 Technical Reference, both of which are available on the PALS website.

The technical adequacy of PALS 1-3 has been established through pilot studies and statistical analyses of PALS scores for over 400,000 students statewide in grades one through three. The reliability of individual subtasks has been documented through the use of Cronbach’s alpha. Reliability coefficients for individual Entry Level tasks range from .81 to .96 and demonstrate the adequacy of their internal consistency. Inter-rater reliabilities expressed as Pearson correlation coefficients and have ranged from .93 to .99, demonstrating that PALS 1-3 tasks can be scored consistently across individuals. In all of these analyses, PALS 1-3 has been shown to be steady, reliable, and consistent among many different groups of users.

Research efforts have also established the content, construct, and criterion-related validity of PALS 1-3. Principal components analyses, discriminant function analyses, and intercorrelations among tasks have established the construct validity of PALS 1-3. Regression analyses have demonstrated the predictive relationship between PALS 1-3 Entry Level Summed Scores in the fall and Stanford-9 and SOL reading scores in the spring. Coefficients of determination have demonstrated that a significant proportion of the variability in spring Stanford-9 and SOL reading scores can be explained by the PALS 1-3 Entry Level Summed Score from nine months earlier. Similar analyses have demonstrated the concurrent validity of PALS 1-3, using the Cat-5 and the QRI for grades one; the Stanford-9 for grade two; the DRA for grades one, two, and three; and the SOL reading component for grade three. All of these analyses provide evidence of the validity of PALS 1-3 as an early reading assessment that reliably identifies students in need of additional instruction.

In summary, PALS 1-3 provides an assessment tool that has good evidence of validity and can be used reliably to screen students in grades one through three for difficulty in beginning reading. PALS 1-3 shows evidence of both internal consistency and inter-rater reliability, indicating that it can be administered and scored consistently by different users. PALS 1-3 also shows evidence of content, construct, and criterion-related validity, suggesting that PALS has indeed captured the underlying constructs associated with beginning reading.

HOW ARE DATA MANAGED IN PALS?

PALS uses cutting edge technology to manage the PALS assessment data. Using a web-based score entry and reporting system, PALS users are provided with instantaneous reports that track student progress over time and provide information about where to begin classroom instruction. Specifically, the PALS system:

- Allows teachers and administrators to easily and quickly enter scores using a web browser
- Immediately calculates results
- Immediately generates comparisons to previous assessments
- Makes interpretive reports available to teachers, principals, and district representatives
- Stores a comprehensive suite of data (historical and current), which can be extracted into custom reports or further analyzed and summarized using statistical analysis software

SUMMARY

The PALS assessment provides a screening tool with good evidence of reliability and validity that can both screen for potential reading problems and provide teachers with significant instructional diagnostic information about the nature and extent of children's difficulties with early literacy fundamental that coincide with the essential components of reading outlined in Reading First legislation. The Internet reporting system is an integral part of the PAL assessment as it "banks" scores over time and can track students even when they move from one school system to the next. The Internet reporting system produces a variety of reports available to principals, district representatives, and teachers, which can help them implement the requirements of Reading First.

Table 1. PALS Validity

Type of validity	grade	Criterion	<i>n</i>	Correlation Coefficients*	Explanation
Predictive	1	Stanford-9 Total Reading	739	.73	Fall PALS scores predicting Spring Stanford-9 scores
	2		766	.63	
Predictive	3	Virginia SOL	277	.60	Fall PALS scores predicting Virginia's statewide assessment, the (spring) Standards of Learning
Concurrent	1	QRI Passage accuracy	65	.73	Spring PALS 1-3 passage accuracy and Spring Qualitative Reading Inventory (QRI-I) passage accuracy
Concurrent	1, 2, 3	DRA instructional reading level	197	.82	Spring PALS scores and Spring Developmental Reading Assessment (DRA) instruction reading level
Concurrent	1	CAT/5 Total Reading with PALS Entry Level score	195	.75	Spring PALS scores and Spring California Achievement Test (CAT/5) scores
		CAT/5 Word Analysis with PALS Entry Level score		.67	
		CAT/5 Word Analysis with PALS Spelling		.66	
		CAT/5 Total Reading with PALS Spelling		.70	
Concurrent	1	Stanford-9 Total Reading	174	.67	Spring PALS scores and Spring Stanford-9 Total Reading score
	2		50	.57	
Concurrent	3	SOL Total Reading	283	.57	Spring PALS scores and Spring Standards of Learning (SOL) Reading
		SOL Word Analysis with PALS spelling		.52	

*all correlations: $p < .01$

Table 2. PALS Reliability

Type of reliability and Tasks	grade	n	Correlation Coefficients*		Information
			range	median	
Internal consistency: Cronbach's alpha					
Entry Level Tasks	1		.66 - .88	.81	Includes entire 1 st grade samples from Fall 1998 ($n = 14,741$), Spring 1999 ($n = 7,943$), Fall 1999 ($n = 11,248$) and Spring 2000 ($n = 6,525$); Cronbach's alpha computed for entire sample and for subgroups based on demographics (SES, gender, ethnicity, region of the state)
Word Recognition in Isolation	K - 3		.81 - .96	.91	Includes pilot study samples ranging in size from 25 to 617; mean sample size = 245. Includes all word lists (preprimer, primer, 1 st grade, 2 nd grade, and 3 rd grade)
Word Recognition in Isolation	K - 3		.92 - .93	.92	Includes random subsamples of 4,668 (preprimer list), 4,541 (1 st grade list), and 4,387 (2 nd grade list) from statewide sample.
Spelling	K - 3		.86 - .92	.90	Includes pilot samples from spring 2001 and fall 2001
Inter-relater reliability					
Word Recognition in Isolation	K - 3		.98 - .99	.98	Includes sample sizes ranging from 45 to 63 (mean sample size = 51) for preprimer, primer, 1 st grade, 2 nd grade, and 3 rd grade word lists
Spelling	K - 3		.99 - .99	.99	Includes kindergarten and 1 st grade pilot samples from 1997 ($n = 130$) and 1999 ($n = 154$), as well as 1 st grade ($n = 375$), 2 nd grade ($n = 276$) and 3 rd grade ($n = 257$) samples from fall 2001.
Oral Reading in Context	1-3		.94 - .98	.96	Includes pilot sample (total $n = 478$) from fall 2000; subgroups read the primer ($n = 36$), 1 st grade ($n = 43$), 2 nd grade ($n = 50$), and 3 rd grade ($n = 72$) passages.

Inter-rater reliability (cont.)					
Alphabet Recognition	K, 1		.99 - .99	.99	Includes pilot samples of kindergarten and 1st grade students from 1997 ($n = 122$) and 1999 ($n = 154$).
Letter Sounds	K, 1		.98 - .99	.98	Includes pilot samples of kindergarten and 1 st grade students from 1997 ($n = 121$) and 1999 ($n = 154$)
Concept of Word	K	110		.97	Fall 2001 pilot sample
Blending	1-3	55		.97	Fall 2000 pilot sample
Sound to Letter	1-3	55		.94	Fall 2000 pilot sample