Validity of Core5 Performance Predictor Scores 2015-2016 School Year

Lexia Reading Core5® Research Report

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The Lexia Reading Core5® (Core5) technology-based instructional program contains performance measures that can be used to assess reading ability. As a component of Lexia's embedded Assessment Without Testing® tool, students receive a monthly **Performance Predictor score** which estimates their percent chance of reaching their end-of-year (EOY), grade-level benchmark in Core5.

This report documents the criterion validity of Core5 Predictor scores from the beginning and middle of the school year using correlations with established outside assessments, both progress monitoring and outcome measurement tools. This report also provides descriptive statistics to illustrate the alignment between On Target Core5 Predictor scores and proficiency on outside assessments.

Predictor Scores

Predictor scores are derived from formulas based on norm-referenced data that vary by student grade and month. These formulas contain up to five Core5 performance variables (e.g., Core5 level, cumulative minutes of Core5 use, etc.). A Predictor score can be interpreted as follows: "If this student continues to work at a similar pace and amount of time as in previous months, his/her chance of reaching EOY, grade-level benchmark is ## percent."

Predictor scores are organized into three risk levels: On Target (80-99%), Some Risk (31-79%), and High Risk (1-30%). Based on their risk level and grade, students are given a weekly usage target (20-80 minutes) that is updated monthly. Consistently meeting usage targets and making progress in Core5 increases the likelihood that students will reach their EOY, grade-level benchmark. Thus, Predictor scores may change over time as a result of providing sufficient access to Core5 and individualizing instruction for Some Risk and High Risk students. An On Target Predictor score indicates that a student has an 80% or better chance of reaching EOY, grade-level benchmark in Core5.

Predictor scores were selected for two time points based on typical school assessment schedules:

Beginning-of-Year (BOY) Predictor Score: Based on Core5 performance through the end of October and provided on November 1st.

Middle-of-Year (MOY) Predictor Score: Based on Core5 performance through the end of January and provided on February 1st.

Validity with Progress Monitoring Tools

Sample Description

Overall, 96 schools from 8 states provided progress monitoring assessment data for the 2015-2016 school year. Each school contributed scores for a minimum of 100 students. Students in the analyses used Core5 for at least 20 weeks during the school year, and they met usage targets for at least 50% of their weeks of use.

Outside Assessments

The following progress monitoring tools were examined in separate analyses:

- **aimsweb:** The **aims**web Reading Curriculum-Based Measure is a test of oral reading fluency that is standardized for grade 1 (starting in winter) through grade 5. The **aims**web scores were provided by 36 schools.

- **DIBELS Next:** The Dynamic Indicators of Basic Early Literacy Skills is a test of early literacy skills and/or reading proficiency for grades K-5. DIBELS Next scores were provided by 35 schools.

- **MAP:** The Northwest Evaluation Association Measures of Academic Progress is a computer-adaptive test of reading achievement for grades K-5. MAP scores were provided by 25 schools.

- **STAR:** STAR Early Literacy (for grades K-1) and STAR Reading (for grades 2-5) are brief, computer-adaptive tests. STAR scores were provided by 15 schools.

Results

Correlations. The tables below show pairwise (Pearson product-moment) correlations between Core5 Predictor scores and scores from the progress monitoring tools at the beginning (Table 1) and middle (Table 2) of the school year for each grade. Across all grades and both time points, the pairwise correlations were significant ($p < .001$). All but one of the correlations fell within the medium (.4-.6) to high (.7-.9) range, which is considered strong when evaluating a reading assessment (or program).

Table 1. Beginning-of-Year Correlations Between Core5 Predictor Scores and Progress Monitoring Tool Scores

		Student Grade					
Progress Monitoring Tool	*N*	K	1	2	3	4	5
aimsweb	1,013	--	--	.7	.5	.5	.5
DIBELS Next	9,967	.5	.5	.7	.7	.7	.7
MAP	2,444	.3	.6	.6	.6	.6	.7
STAR Early Literacy	773	.5	.4	--	--	--	--
STAR Reading	2,625	--	--	.6	.6	.6	.7

Note. Correlations can be categorized into three ranges: *High* = .7 – .9, *Medium* = .4 – .6, and *Low* = 0 – .3. Sample sizes are collapsed over grades.

Table 2. Middle-of-Year Correlations Between Core5 Predictor Scores and Progress Monitoring Tool Scores

		Student Grade					
Progress Monitoring Tool	*N*	K	1	2	3	4	5
aimsweb	1,628	--	.7	.7	.5	.5	.6
DIBELS Next	10,037	.5	.7	.6	.7	.7	.6
MAP	1,506	.6	.7	.7	.6	.7	.7
STAR Early Literacy	722	.4	.6	--	--	--	--
STAR Reading	2,564	--	--	.6	.6	.6	.7

Note. Correlations can be categorized into three ranges: *High* = .7 – .9, *Medium* = .4 – .6, and *Low* = 0 – .3. Sample sizes are collapsed over grades.

Alignment to Progress Monitoring Tools at End-of-Year. Table 3 shows what percentage of students with On Target Predictor scores in Core5 at the beginning or middle of the school year also reached proficiency on the progress monitoring tools at the end of the school year. Proficiency was defined as: at/above benchmark for DIBELS Next and at/above the 40th percentile for all other assessments. Of the students who had On Target Predictor scores in Core5 at the beginning or middle of the school year, 79% or more reached proficiency on the progress monitoring tool at the end of the school year.

Table 3. Alignment Between On Target Predictor Scores in Core5 and Proficiency on Established Progress Monitoring Tools

	On Target in Core5 at Beginning-of-Year	On Target in Core5 at Middle-of-Year
Progress Monitoring Tool	**Reached Proficiency on Progress Monitoring Tool at End-of-Year**	
aimsweb	81%	82%
DIBELS Next	79%	84%
MAP	86%	86%
STAR Early Literacy	90%	96%
STAR Reading	82%	83%

Note. Sample sizes for each test and time period range from 718 to 4,175 students.

Validity with Outcome Measurement Tools

Sample Description

Overall, 34 schools from 2 states provided outcome assessment data for the 2015-2016 school year. Each school contributed scores for a minimum of 150 students. Students in the analyses used Core5 for at least 20 weeks during the school year, and they met usage targets for at least 50% of their weeks of use.

Outside Assessments

The following outcome measurement tools were examined in separate analyses:

- **PARCC:** The Partnership for Assessment of Readiness for College and Careers created an end-of-year assessment to measure student performance in English language arts/literacy. PARCC scores for grades 3-5 were provided by 3 schools.

- **SBAC:** The Smarter Balanced Assessment Consortium created the Smarter Balanced assessment system, which provides an end-of-year assessment for English Language Arts. SBAC scores for grades 3-5 were provided by 31 schools.

Results

Alignment to Outcome Measurement Tools at End-of-Year. The publishers of the PARCC assessment created five performance categories: did not yet meet expectations, partially met expectations, approached expectations, met expectations, and exceeded expectations. We considered the top three PARCC performance categories – approached, met, or exceeded expectations – to represent proficiency. The publishers of the SBAC assessment created four performance categories: standard not met, standard nearly met, standard met, and standard exceeded. We considered the top three performance categories – nearly met, met, or exceeded standards – to represent proficiency. Performance categories for most outcome measurement tools are known to be rigorous. For example, the PARCC performance category of "approached expectations" spans the 48th - 67th percentile[a] and is more stringent than the commonly used cut-point for proficiency of the 40th percentile.[b]

[a] The Northwest Evaluation Association (March 2016). *Linking the PARCC Assessments to the NWEA MAP Tests for Colorado.*

[b] Petscher, Y., Kim, Y. S., & Foorman, B. R. (2011). The Importance of Predictive Power in Early Screening Assessments: Implications for Placement in the Response to Intervention Framework. *Assessment for Effective Intervention*, *36*(3), 158-166.

Table 4 shows what percentage of students with On Target Predictor scores in Core5 from the beginning or middle of the school year reached proficiency on the outcome measurement tools at the end of the school year. Of the students who had On Target Predictor scores in Core5 at the beginning or middle of the school year, 86% or more reached proficiency on the outcome measurement tool at the end of the school year.

Table 4. Alignment Between On Target Predictor Scores in Core5 and Proficiency on Established Outcome Measurement Tools

	On Target in Core5 at Beginning-of-Year			On Target in Core5 at Middle-of-Year		
PARCC Expectations	Approached	Met/Exceeded	Reached Proficiency	Approached	Met/Exceeded	Reached Proficiency
	28%	65%	93%	26%	66%	92%
SBAC Standards	Nearly Met	Met/Exceeded	Reached Proficiency	Nearly Met	Met/Exceeded	Reached Proficiency
	26%	60%	86%	26%	63%	89%

Note. Sample sizes for each test and time period range from 225 to 2,169 students.

Conclusion

These results establish that Core5 Performance Predictor scores are valid indicators of reading ability based on comparisons with established progress monitoring and outcome measurement tools. Significant correlations were found between Core5 Predictor scores and scores on progress monitoring tools at the beginning and middle of the school year. In addition, the vast majority of students who were On Target in Core5 at the beginning or middle of the school year also reached proficiency on outside assessments at the end of the school year. These findings show that the Core5 program is a valid measure of reading ability and that Core5 can serve not only as an instructional program, but as a key component in a school's assessment of literacy skills.

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