Validity Report for Core5 and PARCC Assessment

Lexia Reading Core5® Research Report

Data compiled and analyzed by the Research Team (research@lexialearning.com)
Lead authors: Lauren Baron, MS CCC-SLP & Paul Macaruso, PhD

Introduction

According to the National Center for Education Statistics, only 36% of 4th graders in the United States performed at or above the Proficient level in reading on the 2015 National Assessment of Educational Progress. Only 18-21% of Black and Hispanic students performed at the Proficient level. It is well known that reading difficulties can pose major barriers to academic success. Thus, it is essential that students receive research-based instruction within a valid reading program.

This report documents the validity of the Lexia Reading Core5® (Core5) technology-based instructional program as a measure of reading ability. A program's level of validity relates to whether it effectively measures what it claims to measure. The validity of Core5 was evaluated and strong relationships were found with an established reading assessment. Based on these findings, stakeholders can confidently adopt Core5 as an essential part of their school's literacy program.

Overview of Lexia Reading Core5

Core5 is designed to accelerate student mastery of reading skills in grades Pre-K through 5. In the online component of Core5, students develop essential literacy skills in the areas of phonological awareness, phonics, structural analysis, fluency, vocabulary, and comprehension. The program provides guidance for using offline teacher-led lessons and student-led activities to increase automaticity and help students generalize the skills they have learned.

When students begin Core5, an auto placement feature determines an appropriate start level in the program. Students who used Core5 during the previous school year continue where they left off in the spring. In the program, students must achieve 90%-100% accuracy to advance to the next level. Students are considered to have reached their end-of-year, grade-level benchmark once they have completed all Core5 content that corresponds to their grade level.

Core5 Performance Measures

Performance Predictor Scores

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. 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.

For the correlation analyses, Predictor scores were selected for two time points based on typical school assessment schedules:

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

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

Benchmark Status

Benchmark status is based on whether students have or have not reached their EOY, grade-level benchmark in Core5. Students are considered to have reached their EOY, grade-level benchmark once they have completed all Core5 content that corresponds to their grade level. For example, students in grade 1 who have completed material through Level 9 in Core5 by the end of the school year have reached their benchmark.

Key Terms

Validity is the degree to which an assessment (or program) measures what it claims to measure. The term validity is similar to *accuracy*. For example, one could ask, "How *accurately* does my school's reading assessment measure reading ability?" If an assessment is valid, we can draw conclusions about the ability it measures. In this document, we consider **criterion validity,** which compares the Core5 performance measures with an established measurement tool.

Correlation is a statistical test used to evaluate criterion validity. It quantifies the strength of the relationship between two sets of measures for the same individuals. In most cases, criterion validity correlations will be positive (i.e., range between 0 and 1). A positive correlation indicates that individuals who have high scores on one measure tend to have high scores on the second measure, and individuals who have low scores on one measure tend to have low scores on the second measure. Correlations can be categorized into three ranges: *High*: .7 – .9, *Medium*: .4 – .6, and *Low*: 0 – .3.

Correlations in the medium or high range are considered **strong** when evaluating a reading assessment (or program). A strong correlation indicates that measures obtained from the reading assessment are related to measures obtained from the established measurement tool. Accordingly, one can conclude the reading assessment is a valid measure of reading ability.

Alignments show that two sources of information – such as content areas or performance categories – correspond with each other. This report further evaluates validity of an instructional program by aligning program performance with proficiency categories on an outside assessment.

Types of Assessment Tools

Progress monitoring tools are used to assess student performance over time and to quantify response to instruction. They are relatively quick to administer and are given multiple times throughout the school year, usually more frequently for high risk students.

Outcome measurement tools are most often annual assessments with the purpose of obtaining an overall index of ability. They take longer to administer and are typically given at the end of the school year.

Validity of Lexia Reading Core5® with the PARCC® Assessment

The Partnership for Assessment of Readiness for College and Careers (PARCC) created an outcome measurement tool to assess student performance in English language arts/literacy at the end of the school year for grades 3-8 and high school. Students receive an overall scaled score that ranges from 650 to 850 as well as a Performance Level indicator, which says how well students met the expectations for their grade level. The following sections present correlations between Core5 performance measures and PARCC scaled scores, as well as descriptive statistics that illustrate the alignment between Core5 and PARCC Performance Levels.

Sample

Measures were collected from 3 public schools located in Massachusetts. Each school contributed PARCC scores for a minimum of 150 students. Students in the analyses used Core5 for at least 20 weeks during the 2015-2016 school year, and they met usage targets for at least 50% of their weeks of use. Analyses were based on a total of 553 students across grades 3-5.

Results

Correlations. To assess criterion validity, correlations were obtained between end-of-year (EOY) Core5 Benchmark status and PARCC scaled scores for each grade. All pairwise correlations were significant ($p < .001$) and fell within the medium (.4-.6) to high (.7-.9) range, which is considered strong when evaluating a reading assessment (or program).

End-of-Year Correlations Between Core5 Benchmark Status and PARCC Scaled Scores			
Grade	3	4	5
ρ	.7	.6	.6
N	208	160	185

Note. ρ = Spearman's rank correlation coefficient or rho.

Alignment between Core5 and PARCC at End-of-Year. The following table shows how well students with On Target Predictor scores in Core5 (from BOY and MOY) performed on PARCC at EOY. 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. Please see the "Validity of Core5 Performance Predictor Scores" report for details on criteria used for proficiency categories.

Of the students who had On Target Predictor scores in Core5 at BOY or MOY, 92% or more reached proficiency on PARCC at EOY.

Alignment Between Core5 On Target Predictor Scores and PARCC Proficiency Categories			
Core5 [1]	PARCC		
On Target in BOY	Approached Expectations	Met/Exceeded Expectations	Reached Proficiency
N = 225	28%	65%	93%
On Target in MOY	Approached Expectations	Met/Exceeded Expectations	Reached Proficiency
N = 230	26%	66%	92%

The next table shows the alignment between Core5 benchmark status and performance on PARCC at the end of the school year. Of the students who reached EOY, grade-level benchmark in Core5, 87% reached proficiency on PARCC. Notably, the 58% of students who reached Core5 benchmark and Met/Exceeded expectations on PARCC was higher than the percentage of students who Met/Exceeded expectations on PARCC across all schools in the same Massachusetts districts in the same year (37-43%).

Alignment Between Core5 Benchmark Status and PARCC Proficiency Categories			
Core5	PARCC		
Reached EOY Benchmark	Approached Expectations	Met/Exceeded Expectations	Reached Proficiency
N = 339	29%	58%	87%

Conclusion

This report found that Core5 performance measures are valid indicators of reading ability based on comparisons with an established outcome measurement tool. The significant correlations between Core5 benchmark status and PARCC scaled scores at the end of the school year provide evidence that the program is a valid measure of reading ability. Additionally, when students are On Target or reach benchmark, their performance in Core5 is associated with proficiency on PARCC. 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.

---

[1] All 553 students in the sample had BOY Predictor scores with 225 (41%) On Target. MOY Predictor scores were available for 549 students with 230 (42%) On Target.