



A Classification Accuracy Analysis of Classworks Reading Universal Screener for Elementary Grades (2-5)



November 2022

About This Whitepaper

Classworks conducted a classification accuracy analysis to evaluate the accuracy of Classworks Reading Universal Screener assessments in classifying students as “at-risk” or “not at-risk” in reading. Data was collected from over 2,700 elementary students in grades 2-5, throughout the 2021-2022 school year.



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Introduction

Properly identifying students as being “at-risk” is critical for educators to provide the instructional help that students need. It is important that academic screeners are able to appropriately identify students who are “at-risk” and those who are “not at-risk”. Classworks Universal Screener assessments have been evaluated to determine the accuracy of classifying students as “at-risk,” identified as performing at or below the 20th percentile in reading, in comparison to an established independent measure, NWEA’s MAP Growth reading assessment.

In an evaluation of Classworks Reading Universal Screener assessments, Classworks Reading Universal Screener classifications were compared to the classifications determined by performance on the NWEA MAP Growth reading assessments, for students in second-fifth grades during the 2021-2022 school year. Students could be classified as “at-risk” or “not at-risk” based on their Universal Screener scaled score in comparison to the NWEA MAP Growth scaled score and their corresponding cut scores indicating performance at or below the 20th percentile.

The comparisons between Classworks Universal Screener classifications and classifications determined by NWEA MAP Growth assessments in reading for elementary grades provided a classification of students into one of four cells in a “confusion matrix.” These four cells were organized as either True-Positive, True-Negative, False-Positive, or False-Negative.

A True-Positive indicated that students were identified as “at-risk,” performing at or below the 20th percentile, on both the Universal Screener and MAP assessments. A True-Negative indicated that students were identified as “not at-risk” on both the Universal Screener and MAP assessments. A False-Positive indicated students that were identified as “at-risk” on the Universal Screener but “not at-risk” on the MAP assessment. A False-Negative indicated students that were identified as “not at-risk” on the Universal Screener, but “at-risk” on the MAP assessment. These classification analyses were performed by evaluating the sensitivity and specificity.

Negative predictive power is a measure that estimates the accuracy of classifying students as “not at-risk.” A useful screening tool should have very high negative predictive power such that “at-risk” students are not misidentified as not being at-risk.

Main Findings

Results from the evaluation of Classworks Reading Universal Screener classification accuracy analyses revealed that Classworks Reading Universal Screeners are useful in classifying students “at-risk” in reading (Table 1). Using test data from over 2,700 second-fifth grade students, and controlling for a base rate representative of a national sample in each grade-level subset, the Classworks Reading Universal Screener was found to have a range of 93%-96% negative predictive power for reading students in grades 2-5. Additional demographic characteristics of each grade-level subset are available in Appendix A.

Table 1

Classification Accuracy Analysis: Criteria and Results of Classworks Reading Universal Screener in Grades 2-5

	Grade 2	Grade 3	Grade 4	Grade 5
NWEA MAP Growth Assessment Cut Score (for at/below 20th percentile)	≤160	≤173	≤183	≤191
Universal Screener Assessment Cut Score (for at/below 20th percentile)	≤250	≤290	≤320	≤360
Classification Data - True Positive	24	22	20	26
Classification Data - False Positive	22	21	25	20
Classification Data - False Negative	10	7	11	8
Classification Data - True Negative	144	150	144	146
Base Rate	0.17	0.15	0.16	0.17
Overall Classification Rate	0.84	0.86	0.82	0.86
Sensitivity	0.71	0.76	0.65	0.76
Specificity	0.87	0.88	0.85	0.88
False Positive Rate	0.13	0.12	0.15	0.12
False Negative Rate	0.29	0.24	0.35	0.24
Positive Predictive Power	0.52	0.51	0.44	0.57
Negative Predictive Power	0.94	0.96	0.93	0.95

Conclusions

Classworks Universal Screener assessments are useful in classifying students as “at-risk” in reading. In addition to sensitivity ranges between 0.65-0.76, and specificity ranges between 0.85-0.88, the negative predictive power ranges for grades 2-5 are between 93-96%. These results indicate that Classworks Universal Screener assessments accurately identify students as “at-risk” or “not at-risk.”

Classworks Universal Screener assessments are specifically designed for the purpose of screening students who may need additional intervention and be used as part of the Response to Intervention (RtI) and Multi-Tiered System of Supports (MTSS) process.

Results from this study, evaluating the classification accuracy of Classworks Universal Screeners, can be used alongside our state-specific predictive validity studies for educators to confidently prepare for High-Stakes tests and monitor grade-level readiness and performance. Classworks state-specific predictive validity studies can be found at <https://www.curriculumadvantage.com/efficacy>.

About Classworks

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For more information:

Contact Classworks at hello@classworks.com,
call 770-325-5555, or visit www.classworks.com.

Appendix A

Classification Accuracy Analysis: Sample Demographics

	Grade 2	Grade 3	Grade 4	Grade 5
Sample Size	200	200	200	200
Male	54.5%	50.5%	47%	55.5%
Female	37%	47.5%	49%	41%
Gender Unknown	8.5%	2%	4%	3.5%
White, Non-Hispanic	12%	9%	16%	8%
Black, Non-Hispanic	58%	70.5%	53.5%	59.5%
Hispanic	7%	6%	9.5%	11%
Asian/Pacific Islander	2.5%	2.5%	4.5%	3%
American Indian/Alaska Native	0%	<1%	0.5%	<1%
Other	10%	6%	7.5%	11.5%
Race / Ethnicity Unknown	10.5%	5.5%	8.5%	6.5%