

Why Renaissance Learning uses 40th percentile rank as the default screening benchmark

Many states and researchers interpret the terms “working at grade level” and/or “proficient” to generally correspond to roughly the 40th percentile (PR40). Below is a summary of the policy and research support we use to inform our decision to set the default “at/above benchmark” cut score at PR40 in the STAR Reading™, STAR Early Literacy™, and STAR Math™ Screening Reports. **Using the PR40 is the minimum benchmark level recommended** but there is not a limit on how high the benchmark could be set. The benchmark can vary depending on performance levels of the students. For higher performing students, the 50th percentile or higher might be reasonable.

Expert Suggestion

Response to Intervention (RTI) expert Dr. Ed Shapiro of Lehigh University consulted with us on developing our STAR Screening Reports, and he strongly recommended that the default benchmark corresponding to “working at grade level” be set at the 40th percentile. Although educators have the ability to change this benchmark, Dr. Shapiro urged Renaissance Learning™ to emphasize in professional development that the benchmark should not be set lower than the 40th percentile, no matter how low the current performance. He indicated that it’s fine if it takes schools years to move most kids above the 40th percentile, but the benchmark should not fall below that point because otherwise schools will be doing a disservice to their students.

State Policy / Reading First

As part of Reading First compliance, 24 states indicated that they established their reading proficiency cut score in terms of percentile rank. Of those states, nearly all (20) set their proficiency cut score at the 40th percentile. Only four states using a percentile rank chose something other than the 40th percentile. The other states receiving Reading First funds did not use norm-referenced assessments and thus had to use something other than percentile rank for benchmarking.

Study: Comparison of Classification using ROC cutscores versus PR40 on STAR tests

A Receiver Operating Characteristic (ROC) analysis was done on STAR Math and STAR Reading to determine the cutscore that would optimize both sensitivity (the probability that the screening tool identifies those who are at risk) and specificity (the probability that the tool does not incorrectly identify students who are not at risk). Using the same sample the classification accuracy of this cutscore was compared to the classification accuracy of using the 40th percentile as the cutscore for both STAR Math and STAR Reading. Research was conducted and compared each cutscore for STAR Math and STAR Reading.

The comparison showed that the differences in the results between the two cut scores are minor, and are understandable in an RTI framework. Using the 40th percentile as the cut score yields:

- Less students who are actually at risk not being identified as such (Lower false negative rates)
- Higher probability that the STAR product will identify those truly at risk (Higher sensitivity)

Further Research Support for the 40th percentile

As noted by Mellard & Johnson (2008): “because screening does not directly result in a diagnosis, it is better for a screening instrument to err on the side of false positives (identify students as at risk that might not be at risk). Therefore, a wider net with which to capture potentially at-risk students can be cast with screening measures,” (p. 25). As noted above, using PR40 as a benchmark does cast a wider net. Related, Nelson (in press) writes that, “the current state of affairs is one in which to achieve high sensitivity an allowance must be made for substantial false positives rates” (p. 6). Therefore, a higher number of false positives when using the 40th percentile as the cutscore is both advantageous and expected.

References

Mellard, D.F. & Johnson, E. (2008). *RTI: A practitioner's guide to implementing response to intervention*. Corwin Press: Thousand Oaks, California.

Nelson, J.M. (in press). Psychometric properties of the Texas Primary Reading Inventory for early reading screening in Kindergarten. *Assessment for Effective Intervention*.