Meets ESSA "STRONG" Evidence Criteria

The Every Student Succeeds Act (ESSA) promotes evidence-based education programs by ensuring that programs are proven to be effective in increasing student achievement. ESSA includes four levels of evidence: strong, moderate, promising, and evidence that demonstrates a rationale. The ratings of the ESSA level of evidence reflect the quality, rigor, and statistical significance of the research study design and findings of the study. HMH's evidence ratings are based on the U.S. Department of Education's nonregulatory guidance for ESSA. Evidence ratings issued by clearinghouses and independent research agencies (e.g., Evidence for ESSA) may differ due to the varying criteria used to judge evidence.

PROGRAM OVERVIEW

Powered by artificial intelligence (AI) and evidence-based best practices, *Amira* is a reliable classroom assistant that assesses oral reading fluency (ORF), screens for dyslexia, and provides individualized reading practice. Developed in conjunction with leading psychometricians, neuroscientists, reading scientists, and AI researchers, *Amira* generates actionable instructional recommendations with every interaction, maximizing the time teachers spend with students.

Amira originated from 20 years of rigorous research conducted at Carnegie Mellon University. Led by Dr. Jack Mostow, dozens of data scientists, AI engineers, and computer scientists worked to create an Intelligent Reading Tutor capable of helping kids learn to read. After more than 100 published studies and many field trials at Carnegie Mellon's Project LISTEN, Amira emerged.

Per US DOE guidelines, multiple studies can cumulatively meet the large sample requirement and the multi-site sample requirement, as long as each study meets the other requirements corresponding with the specific level of evidence.

STRONG
ESSA EVIDENCE RATING

DISTRICT: Two Blue Ribbon Schools of Excellence (PA)
STUDY YEAR: 2000-2001
STUDY CONDUCTED BY: Mostow, J., Burkhead, P., Corbette, A., Cuneo, A., Rossbach, S., & Tobin, B.

EVIDENCE CRITERIA	STUDY EVIDENCE & HIGHLIGHTS
Well-designed &well-implemented experimental study or Randomized Control Trial (RCT)	An experimental RCT study conducted for a seven-month period where students within classrooms were randomly assigned to the treatment group using the Project LISTEN's Intelligent Reading Tutor or to the comparison group who performed Sustained Silent Reading (SSR). All students completed their reading tasks for 20 minutes a day.
Large & multi-site sample	The efficacy of the Intelligent Reading Tutor has been examined in multiple diverse school districts. The combination of the studies highlighted in this document represents large, multi-site samples. ANALYTIC SAMPLE: • Two Blue Ribbon Schools of Excellence Schools in a large, urban district • Grades 1-4 • 178 participating students • 90 students in treatment group • 88 students in comparison group
Shows statistically significant & positive effects	Researchers conducted an analysis of variance that took treatment and gender as fixed effects, class as a random effect, and significant pretests as covariates. Results showed that students in the treatment group significantly outgained their statistically matched SSR classmates in word identification, word comprehension, passage comprehension, fluency, phonemic awareness, rapid letter naming, and spelling as measured by the Woodcock Reading Mastery Test. The Intelligent Reading Tutor made the greatest difference in Grade 1, where effect sizes for these skills ranged from .20 to .72.

Source: Mostow, J., Aist, G., Burkhead, P., Corbett, A., Cuneo, A., Rossbach, S., & Tobin, B. (2002). *Independent versus computer-assisted reading: Equal-time comparison of sustained silent reading to an automated reading tutor that listens.* Paper presented at the 9th Annual Meeting of the Society for the Scientific Study of Reading, Chicago, IL.

STRONG
ESSA EVIDENCE RATING

DISTRICT: Urban Elementary School in a small city near Pittsburgh, PA
STUDY YEAR: 1999-2000
STUDY CONDUCTED BY: Mostow, J., Aist, G., Burkhead, P., Corbett, A., Cuneo, A., Eitelman, S., Huang, C., Junker, B., Sklar, M. B., & Tobin, B.

EVIDENCE CRITERIA	STUDY EVIDENCE & HIGHLIGHTS
Well-designed &well-implemented experimental study or Randomized Control Trial (RCT)	An experimental RCT study conducted over one academic year with students randomly assigned to one of three conditions: treatment group (Project LISTEN's Intelligent Reading Tutor, a computer program that uses automated speech recognition to listen to a child read aloud and gives spoken and graphical assistance); comparison group (where students were pulled out daily for one-on-one tutoring by certified teachers); and control group receiving regular instruction without any tutoring. Students in all three conditions received daily 20-minute instruction in their respective conditions. To control for materials, the human tutors used the same set of stories as the Automated Reading Tutor.
Large & multi-site sample	The efficacy of the Intelligent Reading Tutor has been examined in multiple diverse school districts. The combination of the studies highlighted in this document represents large, multi-site samples. ANALYTIC SAMPLE: • Diverse urban school district • Grades 2-3 • 65% White • 35% African American • 75% Free/reduced-price meals • 131 participating students • 58 treatment students • 34 comparison students • 39 control students
Shows statistically significant and positive effects	Researchers used an analysis of variance of gains by treatment and grade, with an interaction term for grade and treatment, and pretest scores as covariates. Results showed that third graders in both the computer- and human-tutored treatment and comparison conditions outperformed the control group significantly in word comprehension (p<.02, respective effect sizes .56 and .72) and approaching significance in passage comprehension (p=.14, respective effect sizes .48 and .34) as measured by the Woodcock Reading Mastery Test.

Source: Mostow, J., Aist, G., Burkhead, P., Corbett, A., Cuneo, A., Eitelman, S., Huang, C., Junker, B., Sklar, M.B., & Tobin, B. (2003). Evaluation of an automated Reading Tutor that listens: Comparison to human tutoring and classroom instruction. *Journal of Educational Computing Research, 29*(1), 61-117.

STRONG
ESSA EVIDENCE RATING

DISTRICT: Fort Pitt Elementary School, Pittsburg, PA
STUDY YEAR: Spring 1998
STUDY CONDUCTED BY: Mostow, J., Aist, G., Huang, C., Junker, B., Kennedy, R., Lan, H., Latimar, D., O'Connor, R., Tassone, R., Tobin, B. and Wierman, A.

EVIDENCE CRITERIA	STUDY EVIDENCE & HIGHLIGHTS	
Well-designed &well-implemented experimental study or Randomized Control Trial (RCT)	An experimental RCT study conducted over a four-month period where students were randomly assigned into one of three conditions: treatment group using the Intelligent Reading Tutor, a comparison group using a commercial reading software, or a control group using other reading activities. All students received reading instruction through their respective conditions for 20 minutes a day.	
Large & multi-site sample	The efficacy of the Intelligent Reading Tutor has been examined in multiple diverse school districts. The combination of the studies highlighted in this document represents large, multi-site samples.	ANALYTIC SAMPLE: • Small urban school • Grades 2, 4, 5 • 72 participating students
Shows statistically significant and positive effects	Although the study lasted only four months and actual usage was a fraction of the planned daily 20 minutes, students in the treatment group who used the Intelligent Reading Tutor significantly outgained their matched classmates in the control group in passage comprehension (effect size .60, $p = .002$) as measured by the Woodcock Reading Mastery Test. Furthermore, results showed students in the treatment group progressed faster than their national cohort.	

Source: Mostow, J., Aist, G., Huang, C., Junker, B., Kennedy, R., Lan, H., Latimar, D., O'Connor, R., Tassone, R., Tobin, B. and Wierman, A. (2003b). *Four-Month Evaluation of a Learner-controlled Reading Tutor that Listens.* In Speech Technology for Language Learning, V.M. Holland and F.N. Fisher, Eds. Swets & Zeitlinger Publishers, Lisse, The Netherlands.

To learn more about the research behind *Amira*, visit https://www.amiralearning.com/research