North Dakota Efficacy Research

2025

The Science of Reading + AI = Growth

Efficacy Research

Evidence from North Dakota

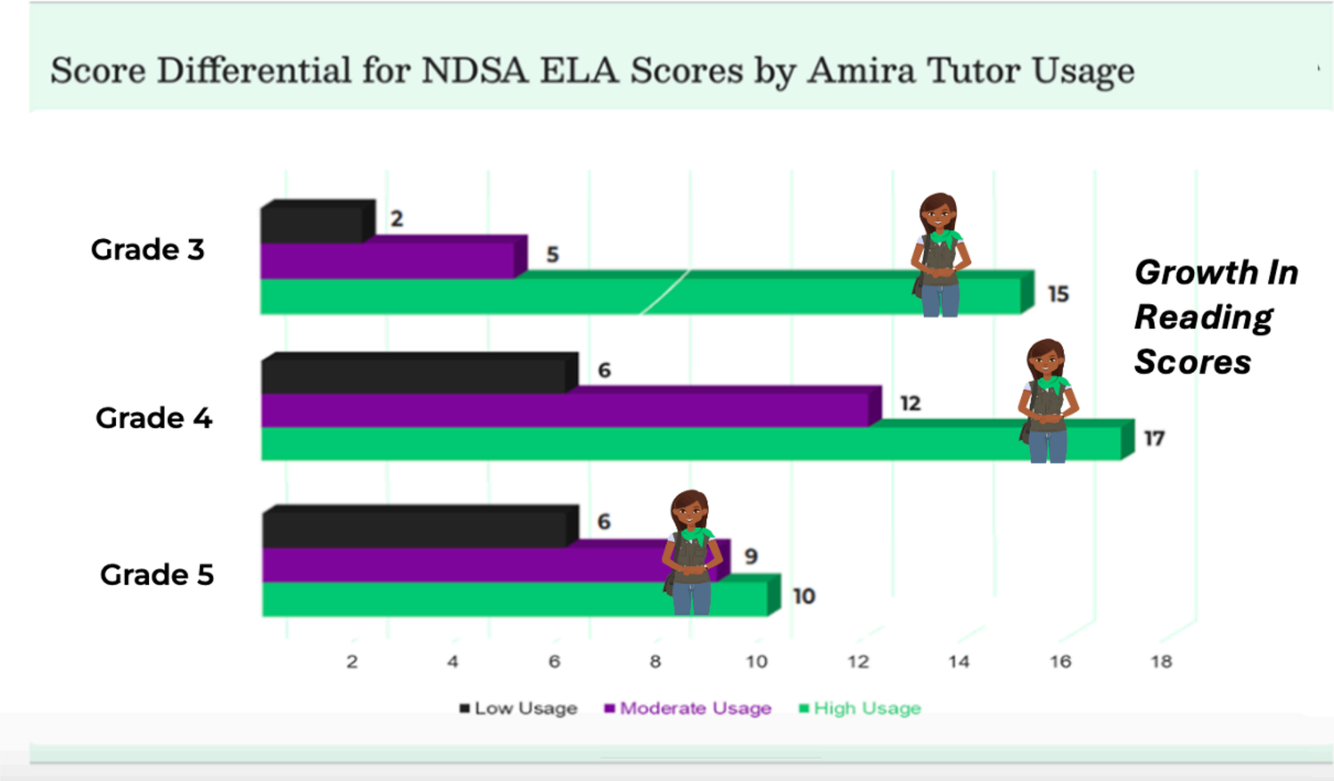
Abstract

The State of North Dakota enables all Districts to utilize Amira tutoring.

This research measures Amira's impact on student reading mastery. Growth was evaluated via the NDSA (the state's summative test).

Analysis shows that high using students grew twice as fast as non-users of Amira during the 2023-2024 school year.

What Does This Research Prove About Amira's Efficacy?



A statistical analysis of student performance in North Dakota demonstrates that students who frequently used Amira grew roughly twice as fast as peers who did not use the program. Higher engagement with Amira's AI-powered literacy tutoring platform was strongly correlated with improved performance on the North Dakota State Assessment (NDSA) in English Language Arts (ELA).

Specifically:

- Third-grade students in the highest usage group grew 13 points higher on the NDSA ELA than those in the lowest usage group.
- Fourth-grade students in the highest usage group grew 11 points more their lower-usage peers.
- Fifth-grade students who used Amira more frequently grew 4 points more than non-using peers.

Who Conducted and Published the Research?

This research was conducted in cooperation with the North Dakota Department of Public Instruction in 2025. The research was based on student data from 27 North Dakota school districts.

Why Is This Research Consistent with the Science of Reading?

Guided oral reading practices are well-supported by the science of reading as effective methods for enhancing various reading skills. The National Reading Panel's comprehensive report highlights that oral reading practice, included repeated reading, significantly improve word recognition, reading fluency, and comprehension across diverse student groups.

What was the study population?

The study analyzed data from 3,046 students in grades 3-5 across 27 North Dakota districts.

GROUP	PERCENTAGE (%)
White	**75.5%**
Hispanic	**8.9%**
American Indian	**6.4%**
Black	**5.9%**
Asian	**2.6%**
Pasific Islander	**0.6%**
Male	**50.3%**
English Learner	**5.0%**

IMPACT: HLM

Table 4. *Two-Level HLM for Third Grade, Coefficients and Standard Errors (SE)*

Fixed Effects	Model 1	Model 2	Model 3
Intercept	572.84* (2.37)	568.89* (3.21)	568.28* (3.25)
Usage 2 (26-50)		1.40 (3.19)	2.25 (3.19)
Usage 3 (51-75)		3.13 (3.56)	4.53 (3.73)
Usage 4 (>75)		10.04* (4.10)	15.28* (4.94)
Error Variance			
Level-1	1227.66* (142.67)	1224.98* (50.06)	1186.65* (49.55)
Level-2 Intercept	238.79* (62.76)	233.92* (61.03)	234.16* (70.84)
Total Usage			0.002* (0.001)
Model Fit			
AIC	12614.7	12601.7	12591.4
BIC	12630.1	12632.5	12627.4

* $p < 0.05$; ICC = .16

Values based on Stata 18.5 Mixed. Entries show parameter estimates with standard errors in parentheses. Estimation Method = REML; Satterthwaite degrees of freedom.

Table 5. *Two-Level HLM for Fourth Grade, Coefficients an*

Fixed Effects	Model 1	Model 2
Intercept	590.51* (2.28)	581.40* (3.27)
Usage 2 (26-50)		6.20 (3.44)
Usage 3 (51-75)		12.39* (3.83)
Usage 4 (>75)		17.43* (4.07)
Error Variance		
Level-1	1509.58* (61.95)	1490.10* (61.19)
Level-2 Intercept	168.10* (55.59)	165.59* (54.45)
Model Fit		
AIC	12685.6	12659.9
BIC	12701.0	12690.6

* $p < 0.05$; ICC = .10

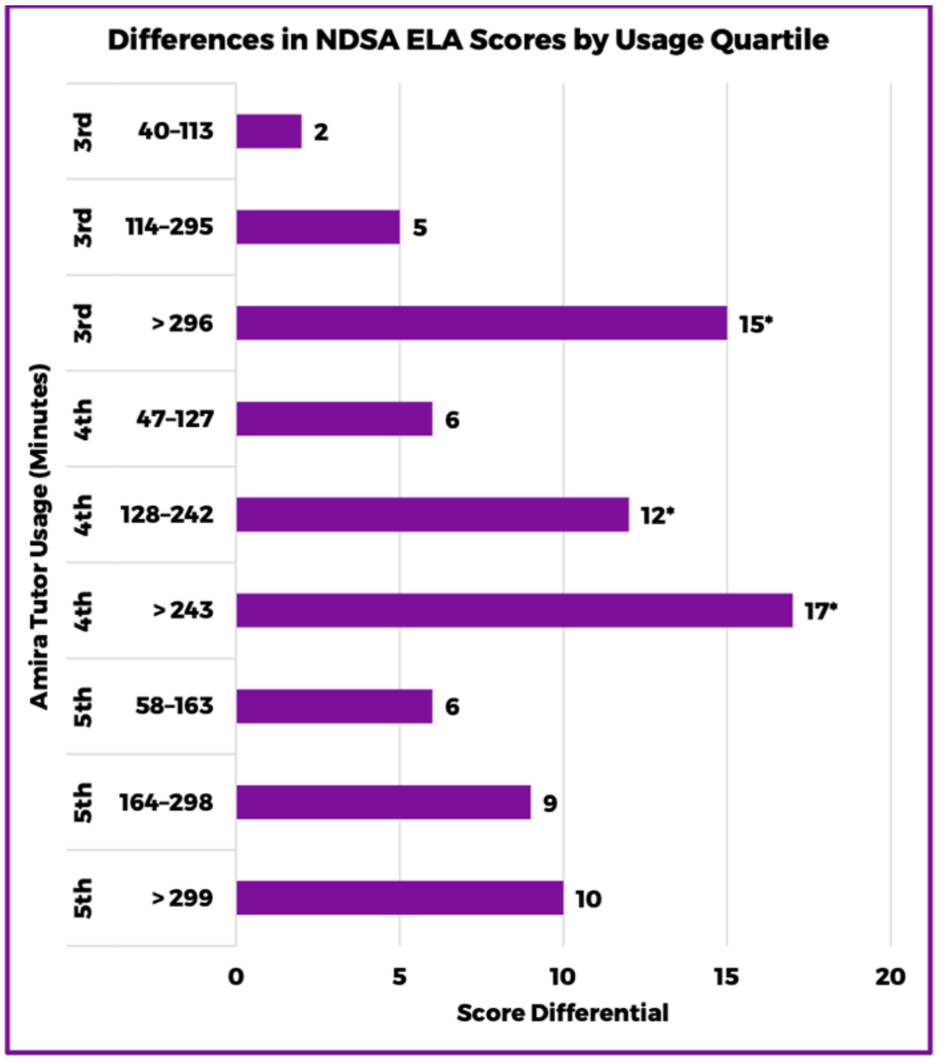
How Was the Study Conducted?

Researchers used a hierarchical linear model (HLM) to analyze how Amira usage influenced student NDSA ELA scores. The model accounted for variations at both the student and school levels, controlling for differences in baseline performance and external factors. Students were grouped into four quartiles based on their total minutes of Amira usage over the school year.

Details of the Demonstrated Effect

The study compared high-frequency Amira users to lower-frequency or non-users. Key findings included:

- The highest-usage students (top quartile) demonstrated the largest gains in NDSA ELA scores.
- Medium users (quartiles 2 and 3) also showed notable improvements, though not as large as the top quartile.
- The lowest-usage group (bottom quartile) had the smallest gains, reinforcing the importance of consistent engagement



* $p < 0.05$

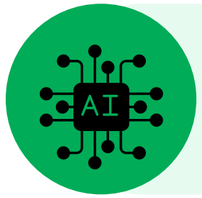
Where Can One Access the Full Study?

The full study, “Using Amira to Increase Performance on North Dakota State Assessments English Language Arts Outcomes”, is available on the Amira Learning website. You can also reach out to info@amiralearning.com

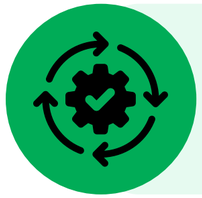
Related Studies

Several other studies support Amira’s impact on literacy growth:

Evaluation and Training Institute (2023): Found Amira significantly outperformed a control group in Utah’s Early Intervention Reading Software Program **(Read Report)**.



Mostow et al. (Carnegie Mellon): Demonstrated that AI-powered reading tutors can be as effective as human tutors **(Read Study)**.



Poulsen et al. (UBC): Showed Amira’s effectiveness for bilingual students **(Read Study)**

Summary & Conclusion

The research confirms that Amira is a powerful, research-based intervention for accelerating literacy growth in K-12 students.

The findings reinforce Amira’s alignment with the Science of Reading, demonstrating that frequent engagement with AI-driven literacy tutoring leads to significant improvements in reading proficiency.