

Bridging Gaps in Math Education: The Algebra by 7th Grade (Ab7G) Journey in Enhancing Student's Mathematics Achievement

Community Partners

Lafayette School Corporation
Metropolitan School District Lawrence Township
West Lafayette School Corporation

Program Objectives



Students

Students accelerate math mastery through ALEKS, on-line and in-person learning, group exercises, hands-on projects, exposure to practicing STEM professionals.



Parents

Parents engage in math concepts, navigation of ALEKS, and hands on projects designed to support their children's learning.



Mentors

Mentors facilitate blended learning environments using web-based and tactile engaging exercises, building math competencies and a math - growth mind set.

Acknowledgements

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References

Virginia Booth Womack, Renee Gibert, Riddhi Chaudhari, Imani Adams, Shauna Adams, Emmanuel Oyakojo, Harika Asuri, Nadia Numa, Halaevalu Patterson, Natosha Root, Shreya Venkatraman, Matiana De Alba, Minhea Thomas, Kameron Jackson, Rachel Koeiman, Lydia Ma, Hamza Abdullahi, Breejha Quezada



Algebra by 7th Grade Tracking to Excellence

Program Description

Algebra by 7th Grade (Ab7G) is a 5-year, elementary program that aims to increase the number of underrepresented students that are academically prepared to take algebra by improving achievement and attitudes towards math and providing STEM exposure opportunities. Beginning in the 3rd through the 7th grade, we work to promote student self-efficacy, unite students with college student mentors, and partner with parents along this educational journey.

Our Models



100% Virtual

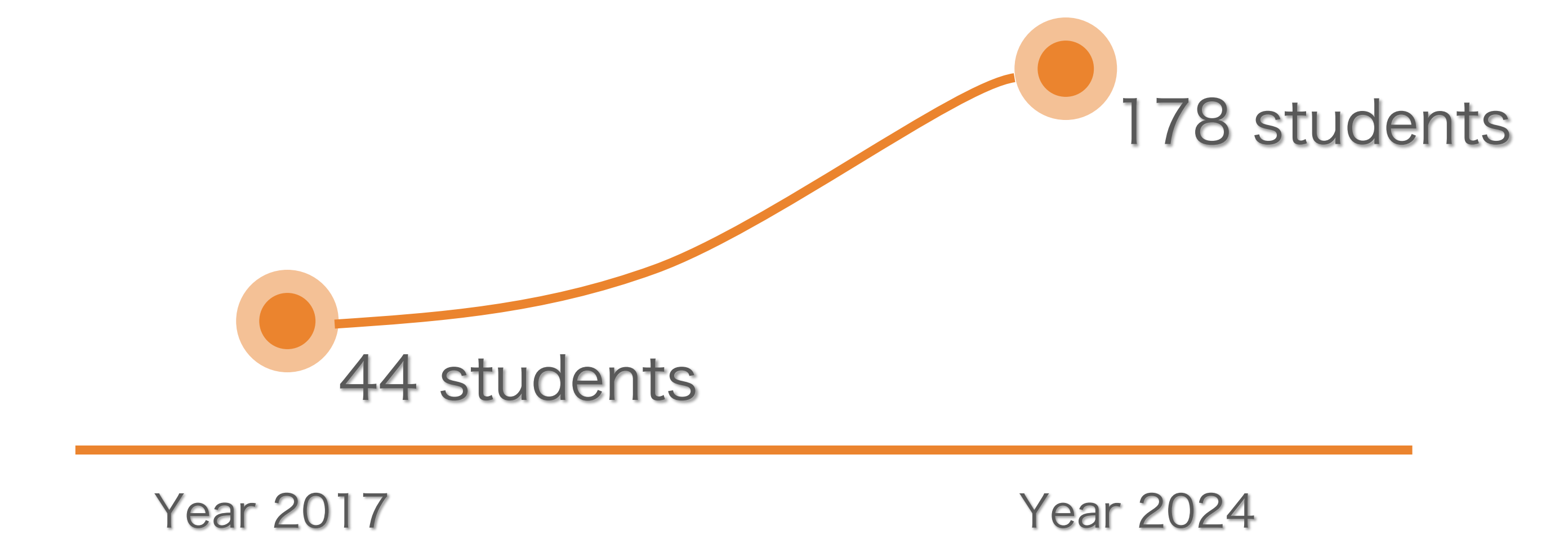


Hybrid

- Mentor - Student math mastery work
- STEM fun-lab project-based learning
- Parent engagement
- Expanded outreach

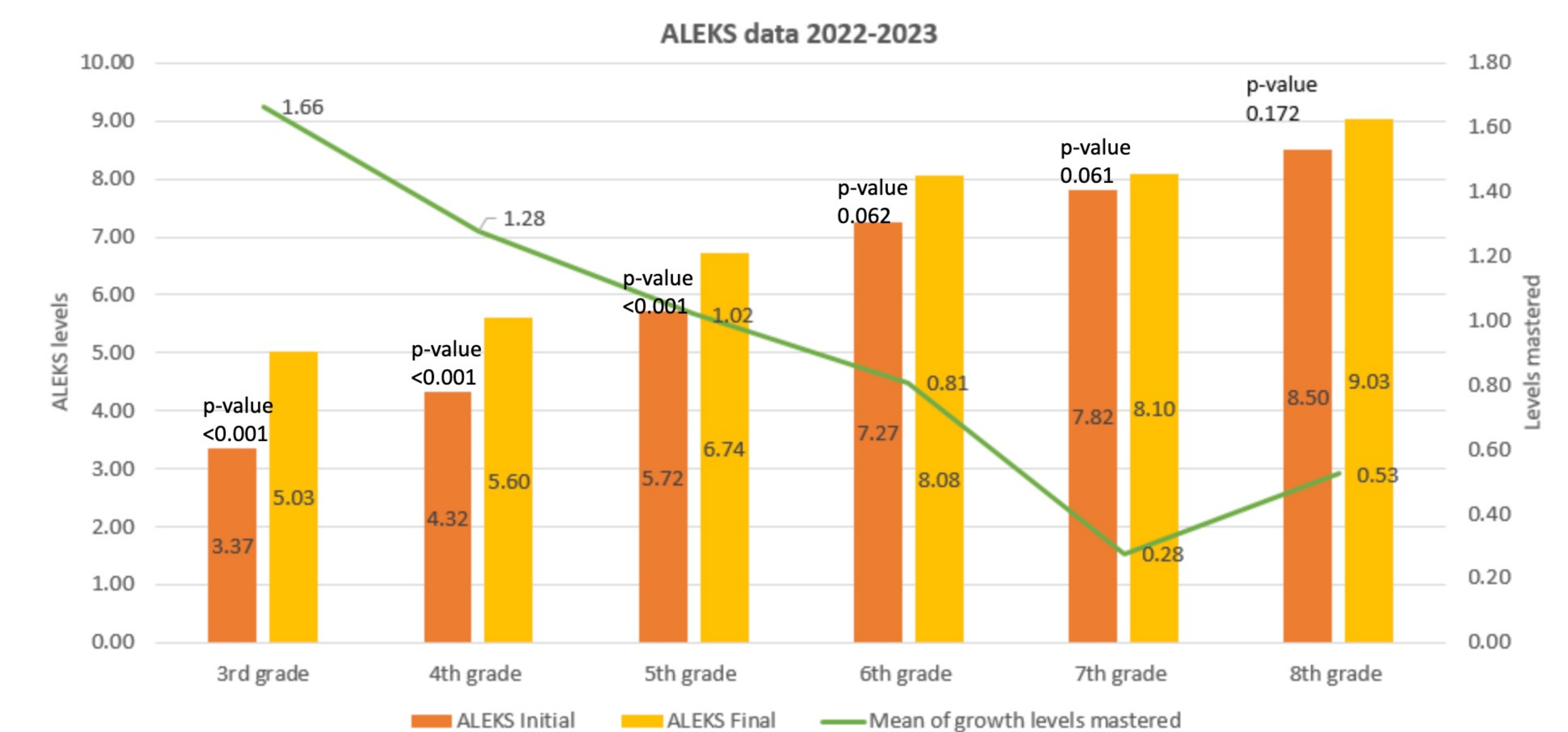
Growth Impact

Since its founding in 2017, Ab7G has retained and added new participants each year; a 304% increase from 2017 to 2024.



Student Performance Impact

Students' ALEKS math tests are taken at the beginning and conclusion of the academic year. To comprehend each student's mathematical achievement, we measure the mean growth from the start to the final evaluation. The average achievement of students is used to quantify their mathematical growth. For example, a student who starts at 3.2 and finishes at 5.2 has mastered two full grade levels of math knowledge. A paired samples t-test reveals that math achievement growth in grades 3-5 is statistically significant. This may imply that immersion in a mathematics counterspace can improve math skills.



Reflection & Conclusion

Stovall (2016) describes the problematic nature of public-school spaces for Black students, as schools function in a dehumanizing manner that perpetuates inequality, and asserts that it is essential to work to ameliorate these conditions. Furthermore, Wachira and Mburu (2017) cite that there is a lack of culturally responsive practices in mathematics pedagogy that does not acknowledge the cultural capital of diverse students. Counterspaces are safe, supportive spaces created by marginalized communities to combat exclusion and discrimination, fostering a sense of belonging, community, and empowerment (Solórzano & Yosso, 2002).

Counterspaces create alternative learning environments that provide Black students with opportunities to (re)engage with mathematics in ways that are culturally relevant and empowering. We argue that it is necessary to (re)imagine what mathematics learning could be with Algebra by 7th Grade. A program that affirms students' identity, recognizes cultural backgrounds, and creates joy. This creates a bridge for students to cross over into mathematics success.