

Drivers

Drivers describe the main factors, leverage points, and/or ideal conditions that would need to be present in order to accomplish the aim.

*This theory of change was designed to support middle and high school students from historically oppressed racial-ethnic (i.e. Black, Latinx) and socioeconomic (i.e. low income) backgrounds. However, the practices are broadly applicable across demographic groups.

AIM
Increase the percentage of students* who report that math learning environments:
 -are meaningful and relevant
 -foster a sense of belonging
 -support learning

Want to Learn More?
 Visit our Change Package on Google Drive by clicking on [this link](#), or the icons and links throughout the tables to the right.

Class environment develops positive social / academic community behaviors

Assessment practices emphasize student learning and participation

Instruction centers student experience and affirms their mathematics identities

Curriculum integrates social justice themes and current events ("humanizing mathematics")

Change Concepts

Change Concepts are 'Bundles' of Change Ideas that are oriented around similar sets of constructs

Deconstruct social boundaries between teachers and students

Use **collaborative classroom structures** and group work to ensure learning, engagement, equity of voice, and sense of community

Value and recognize each student for their unique contributions and interdependence in the class community

Normalize mistakes and create a culture of inquiry

Communicate **high standards** for students and provide meaningful ways to help them demonstrate their progression and achievement

Provide regular, curricularly driven opportunities for students to **self-assess** their progress relative to standards

Create **shared understanding** and development of assessment standards

Implement motivational, accurate, and bias-resistant assessment of learning (i.e. "**equitable grading**")

Provide opportunities to use math to **empower students' cultural identities** and critique students' social worlds

Foster **student voice** and leadership in their learning

Position students as knowledgeable in mathematics both within and outside of the classroom

Bridge current events and social inequities with math content

Foster **student voice** and leadership in their learning

Why This Work Matters:

An imperative to center students' experiences in math education

Research points to numerous factors that are instrumental in the development of positive academic outcomes for all students. These include a positive racial/ethnic identity (1), beliefs about their academic abilities (2), and a sense of belonging (3). Teachers' expectations are one of the most powerful influences in students' beliefs about their own academic abilities, but these have been found to be lower for Black, Latine, and Indigenous students due to biases (4). Asset-based pedagogy ensures that teachers develop essential knowledge and behaviors that sustain high expectations and promote student identity (5). This is particularly important in mathematics (6) where some of the most stubborn achievement disparities persist (7). Asset-based pedagogy is crucial for honoring and affirming students regardless of subject area. However, special attention to these practices within the domain of mathematics is necessary because this subject area has historically been a major focus of high-stakes testing—leading educators to hyperfocus on students' skill development at the expense of empowerment and social connection. In addition, advanced mathematical concepts can sometimes be abstract in nature, which makes it difficult for students from historically marginalized backgrounds to see explicit connections between mathematics content and their day-to-day lives.

However, equity-focused mathematics teachers have found, and are innovating ways to support students' sense of psychological membership in their classrooms by facilitating social ties among students and themselves, and by using mathematics lessons to reinforce the importance of students' cultures and communities. In order to learn more about how to do these practices, Shift partnered with educators across the country to develop a theory of change describing what the key levers for improving students' experiences in their math classrooms, and to build and test a change package with change ideas about this content.

This project was made possible with generous support from the Bill and Melinda Gates Foundation. We also wish to thank [Dr. Francesca Lopez](#) from Pennsylvania State University and [Dr. DeLeon Gray](#) from North Carolina State University, who both made significant contributions to this theory of change at all stages of development. We are tremendously grateful for their time and steadfast commitment to improving student experiences.

References

- 1 Rivas-Drake, D., Seaton, E. K., Markstrom, C., Quintana, S., Syed, M., Lee, R. M., ... & Ethnic and Racial Identity in the 21st Century Study Group. (2014). Ethnic and racial identity in adolescence: Implications for psychosocial, academic, and health outcomes. *Child development*, 85(1), 40-57.
- 2 Möller, J., Zitzmann, S., Helm, F., Machts, N., & Wolff, F. (2020). A meta-analysis of relations between achievement and self-concept. *Review of Educational Research*, 90(3), 376-419.
- 3 Allen, K., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2018). What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review*, 30(1), 1-34.
- 4 Papageorge, N. W., Gershenson, S., & Kang, K. M. (2020). Teacher expectations matter. *Review of Economics and Statistics*, 102(2), 234-251.
- 5 López, F. A. (2017). Altering the trajectory of the self-fulfilling prophecy: Asset-based pedagogy and classroom dynamics. *Journal of Teacher Education*, 68(2), 193-212.
- 6 Matthews, J. S., & López, F. (2019). Speaking their language: The role of cultural content integration and heritage language for academic achievement among Latino children. *Contemporary Educational Psychology*, 57, 72-86.
- 7 Hanushek, E. A., Peterson, P. E., Talpey, L. M., & Woessmann, L. (2019). The unwavering SES achievement gap: Trends in US student performance (No. w25648). National Bureau of Economic Research.