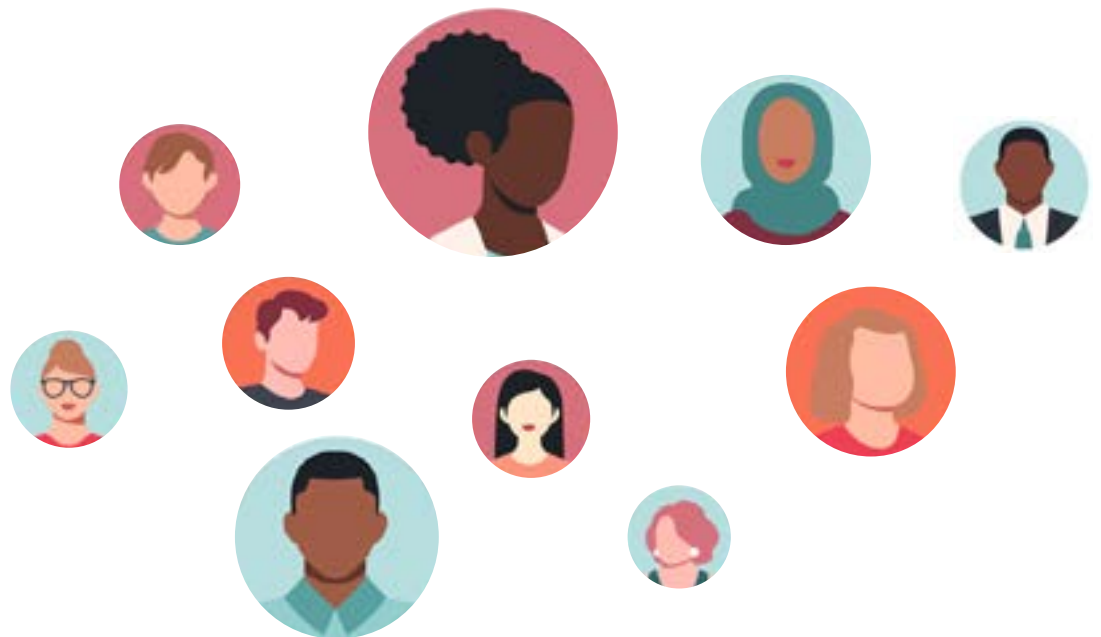




TEACHER-TESTED PRACTICE GUIDES

Adapting Curriculum and Lesson Plans by Integrating Current Events



Why This Work Matters

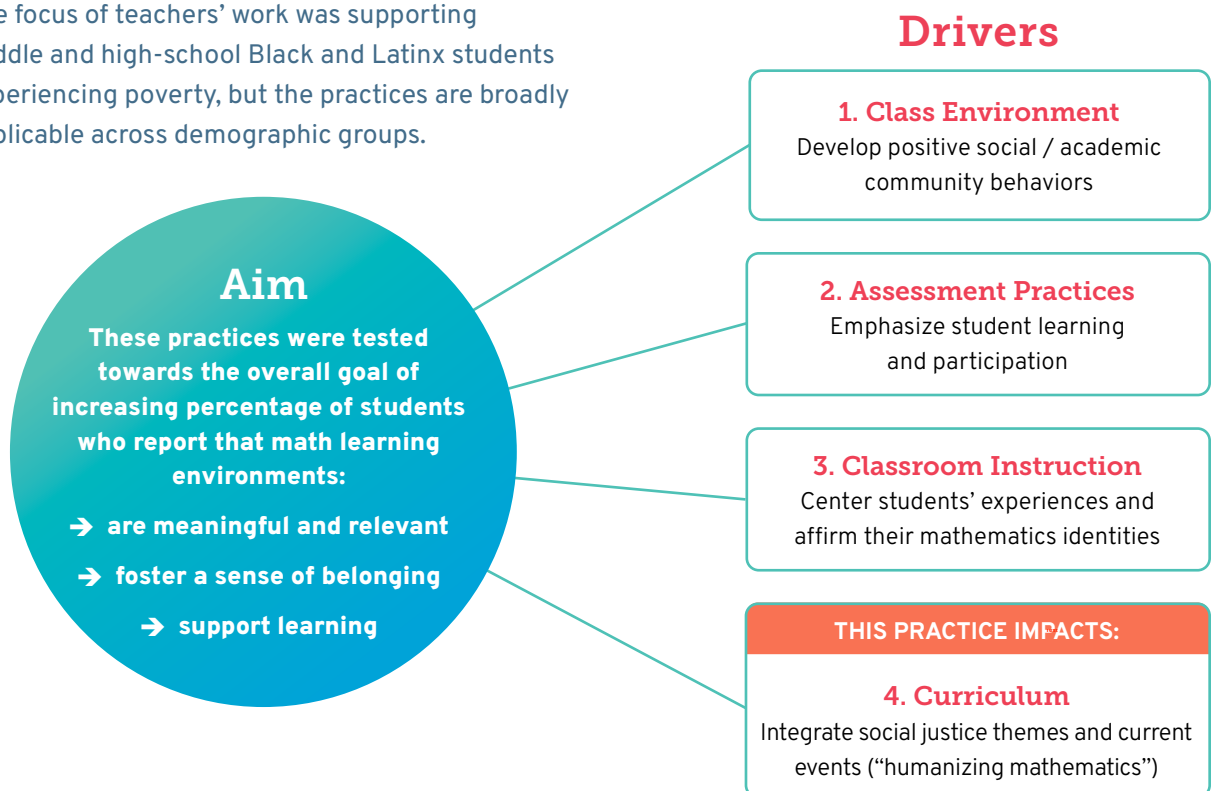
An imperative to center students' experiences in math education

Research points to numerous factors that are instrumental in positive academic outcomes for all students. These include: a positive racial/ethnic identity¹, a sense of belonging², and beliefs about their academic abilities³. Teachers' expectations are one of the most powerful influences, and these have been found to be lower for Black, Latinx, and Indigenous students due to teachers' biases⁴. Asset-based pedagogy ensures that teachers develop essential knowledge and behaviors that sustain high expectations and promote student identity⁵.

This is particularly important in mathematics⁶ where some of the most stubborn inequities persist⁷. Special attention is necessary because this subject area has disproportionately negatively impacted students from historically marginalized backgrounds via high-stakes testing, a hyperfocus on skill development, and the abstract nature of the subject disconnected from their day-to-day lives.

However, equity-focused mathematics teachers are innovating and improving ways to support students' identity as math learners, sense of belonging, and beliefs about their academic ability. To learn more about how these practices can be applied in the classroom, Shift partnered with educators across the country to develop a theory of change describing key levers for improving students' experiences in their math classrooms, and to build and test a few of the potentially high-leverage practices they identified. **The purpose of these resources is to provide educators with concrete examples and guidance from educators that have put these strategies into practice in their context.**

The focus of teachers' work was supporting middle and high-school Black and Latinx students experiencing poverty, but the practices are broadly applicable across demographic groups.



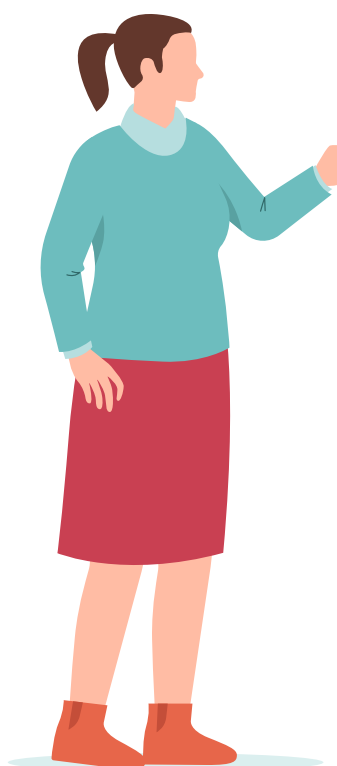
Adapting Curriculum and Lesson Plans by Integrating Current Events

*Special credit and appreciation goes to **Blais Cross of Bisbee High School** who tested this idea in her class in Spring 2022 and contributed to this document.*

1. What it is

Math curricula and lesson plans do not typically highlight the issues that affect the daily lives of many students, particularly those who identify as Black, Latinx, or Indigenous. For example, problem contexts that are extraordinarily relevant to students are rarely featured in standard curriculum. However, teachers can create or adapt lessons and problem contexts to include more relevant examples (i.e. from current events) that allow students to bring their knowledge and experience into the classroom and create a more compelling reason for learning the mathematical concepts and procedures.

Blais Cross, the high school teacher in southern Arizona who tested these changes notes: “Not only do students have an opportunity to gain mastery of mathematical concepts through a more culturally relevant lens, the classroom also becomes a safe learning environment where students are encouraged to think critically, take risks and learn math within a context that draws from their experiences. This engagement is particularly powerful for students of color, multi-language learners and students experiencing poverty. To do this, I choose from a variety of sources for topics/issues that have local, national and global relevance for my students (e.g, US Census Bureau, news sources like CNN, and local news organizations). I also make sure to include topics that are important to my students and their lived experiences and interests. My math lessons can have a greater impact when I integrate current events/ topics that my students recommend.”



2. Why do it

Why I do this change

- ▶ By integrating topics and events that my students can relate to, math becomes less mystified and they can speak as experts while solving math problems
- ▶ If students study math content with issues and events that speak to their interests and experiences, they will engage more with the math content and gain confidence while also attaining mastery
- ▶ As awareness of and a desire to delve into these topics grows, math will be more accessible and interesting for students

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3. How to do it

Getting Started

1. Identify mathematical concepts of focus for the lesson or unit (either from provided curricula or from the course scope and sequence).
2. (Optional) Create a potential list of topics where those concepts could be applied.
3. Find culturally relevant examples to highlight and teach math concepts (or to use in place of pre-existing examples in the curriculum). Examples can come from: credible local/national/international news sources, local topics of interest, or student-generated topics.
4. Insert examples and resources into the curriculum. Or, use videos and information displays with data about an issue while aligning it to the math curriculum.
5. Teach the curriculum and ask for reflections.

"A topic relevant to me is animal testing and making products cruelty-free to protect animals. It's something I'm passionate about and is something I want to continue doing after high school. I'm hoping we can find a way to connect that to math class"



EXAMPLE

Blais wrote this problem looking at the growth rate of rattlesnakes in southwestern Arizona. Many of her students walk long distances—sometimes from Mexico—in areas where these snakes are most common. This is an example of a “light touch” way to integrate a locally relevant topic into specific problems.

The rattlesnake population increases at a rate of 2% per year. There are about 1550 rattlesnakes present in Cochise County this year. Write a function that models the rattlesnake population. How much will this population increase in 10 years?



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When testing this change idea, it is important to keep these related concepts and frameworks centered:

- Identity safety
- Social Belonging
- Critical Thinking
- Student agency

Lessons learned from testing:

- ▶ "Create a space where students have the opportunity to **share their voice on topics they choose** themselves," notes Blais. In one test, 63% of students in her class chose math research topics that are aligned to prompts similar to social justice/current events content when given the choice.
- ▶ Adapting standard lesson plans to include current events **can take time**. This may mean creating plans a week or more ahead of time.
- ▶ Give your students **multiple ways** to offer reflections, share topic ideas and express feedback, including anonymously.
- ▶ Let your class know **what topics interest you** and why; this gives them freedom to respond with their interests as well. Blais shared that she was passionate about high school dropout rates and reducing them. She then asked her students for examples about what interested them, and later used some of these topics for future lessons.
- ▶ Adapt lessons to be **inclusive** of students from diverse backgrounds. Blais, through the help of a colleague who interpreted in Spanish, was able to dialogue with Spanish-speaking students about exponential decay (math content), relating it to the indigenous population of Sonora, Mexico. "I was able to teach exponential decay functions while providing the relevant formula they would be using to solve the test questions. Students helped me with the correct pronunciation of an Aztec figure they all knew about."
- ▶ When given a choice, **students will choose shorter problems** (e.g., word problems), regardless of topic. As Blais noted, "I did not consider that the length of the word problem would affect the outcome of this test."
- ▶ Understand that some students with different experiences/backgrounds will **conflict** with some topics. Use these opportunities to encourage discussion.

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Possible Adaptations

- ▶ Have students write **their math topic ideas** down on slips of paper, put them in a cup, and then students take turns selecting and reading the ideas
- ▶ Use **exit tickets** to find future topics to discuss and gauge impact of topics
- ▶ Give students **credit** for sharing their topic ideas. This rewards students for their contributions to class content
- ▶ Have students **vote** as a class on which topic to discuss in class and note differences in engagement after these topics are discussed. Did students seem more engaged with that topic (compared to one that they didn't choose?)



SEASONALITY:

This is an activity that, after 2-3 hours of preparation, can be deployed at any time in a classroom and benefits best when developed into a regular routine.

Suggested Measures

- ▶ Assess percentage of students who found value in topics used in math lesson
- ▶ Assess percentage of students who believe that their opinions matter
- ▶ Assess percentage of math lessons that use student-generated current event topic

Connection to the Theory of Change

Driver 4: Integration of social justice inequities and current events into existing curriculum (“humanizing mathematics”)

Change Concept: Bridge current events and social justice themes with math content

Want to learn more about other drivers and changes?

[Change Package](#)

[Theory of Change](#)

Defining Our Terms

Theory of Change

A Theory of Change is a description of how we believe change (or improvement) will happen; illustrating how our collective actions will lead to the desired outcomes.

Aim

An Aim is a shared goal of an improvement initiative that is 'SMARTIE', i.e. specific, measurable, actionable, realistic and time-bound as well as inclusive (with whom) and equitable (for whom).

Drivers

Drivers describe the main factors, leverage points, and/or ideal conditions that would need to be present to accomplish the aim of an improvement initiative.

Change Ideas

Change Ideas describe how you might create the conditions described in your drivers in order to accomplish the aim.

Change Package

A Change Package is both a collection of consolidated learning arising from testing change ideas in a theory as well as a resource for those who wish to test and adapt these change ideas.



Appreciation and References

Thank You

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