



TEACHER-TESTED PRACTICE GUIDES

Providing Student Choice Options



Why This Work Matters

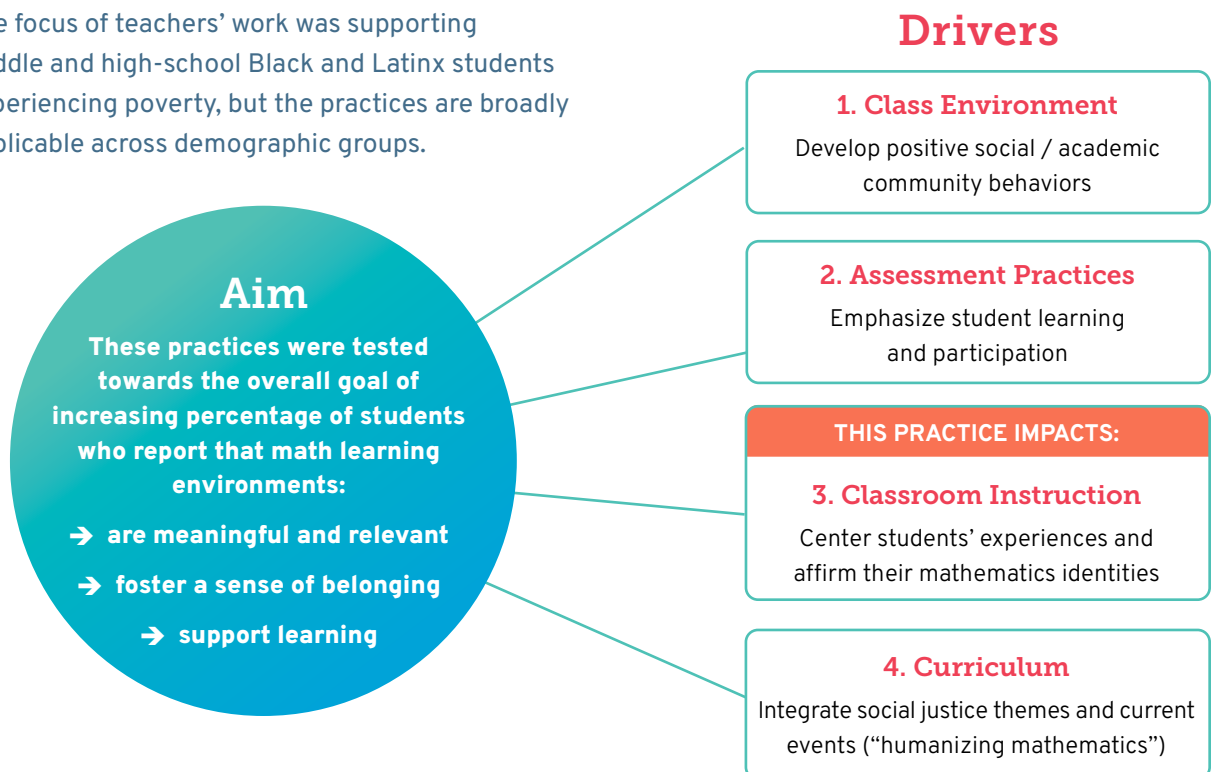
An imperative to center students' experiences in math education

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.



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.



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Special credit and appreciation goes to Crystal Watson of Cincinnati Public Schools who tested this idea in collaboration with multiple teachers in Spring 2022, and contributed to this document.

1. What it is

A “choice board” presents options for different types of problems students can work through to build conceptual understanding and demonstrate mastery of mathematical skills and procedures while also giving students a choice in the types of problems they work on. A choice board can look like a 3x3 grid in a student-facing slide deck that includes all of the required resources and directions students need to complete the tasks. Think of a tic-tac-toe board.

The grid integrates student choice and problem-solving skills, so all students can reach minimum objectives while selecting tasks they prefer. Students are directed to make a “tic-tac-toe” (vertically, horizontally, or diagonally) on the board, so their choices vary and include practice across math skills.

Teachers determine what constitutes the ‘minimum objective’ for a given choice board, whether that’s mastering a mathematical concept/procedure (e.g. understanding and solving linear equations, the Pythagorean theorem, etc.) or increasing awareness of an important social issue (e.g. climate change, gerrymandering, gun violence, etc.). Minimum objectives should then influence the variety of tasks included in the choice board, ensuring tasks vary across content, process, and product.

2. Why do it

Why I do this change

- ▶ Providing students with multiple entry points to develop conceptual understanding supports authentic student choice. This may promote student agency and feelings of self-efficacy, which can support engagement and learning⁸. Additionally, when building student choice boards, teachers have an opportunity to build differentiated connections to their students’ interests and more relevant topics⁹.
- ▶ Student perceptions of relevance and ownership over decision-making leads to better student engagement. This promotes learning¹⁰.



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3. How to do it

Teacher Prep

1. Review the course/unit/week/class objectives to identify timescale for student choice board.
 - ▶ Choice boards can be useful across a variety of timescales. For example, the teacher in this example used a choice board as the primary activity for one entire class period, but he could have chosen instead to have students return to it throughout the week after completing the 'base' lesson work for the day.



"I like the choices we had. We didn't have to do everything but whatever we did was good and challenged us. I like that it wasn't just a worksheet."

8TH GRADE STUDENT

2. Create the tic-tac-toe board (3x3 table w/headers)

Think about the columns and rows:

- ▶ What choice do students have (think about content, process, and product from the Visual Model of Differentiation below)?
 - ▶ What do we want to make sure all students are working toward?
3. Review curricular materials and include problems into the board, being mindful of placing different types of problems in columns and rows, so students can choose a variety of problems as they complete a tic-tac-toe.
 4. Identify and fill gaps with additional materials/problems from other high-quality sources (e.g. Desmos, Illustrative Math, EngageNY), so students have all the necessary resources to complete a task.
 5. Use the student choice board with your students!

EXAMPLE OF A CHOICE BOARD FROM AN 8TH GRADE MATH CLASS

TIC-TAC-TOE CHOICE BOARD

Directions: Select 3 activities to complete. For this Choice Board, complete either a vertical or diagonal tic-tac-toe.

Activity 1 - Directions linked here Linear Equations Task	Activity 2 - Directions linked here Learn about water dams	Activity 3 - Directions linked here Use Linear Equations to determine your carbon footprint
Activity 4 - Directions linked here Matching Activity	Activity 5 - Directions linked here Golf's Impact on the Environment	Activity 6 - Directions linked here Cross-country comparison: 1 mile, 1 wonder
Activity 7 - Directions linked here Data Task	Activity 8 - Directions linked here Should I buy a T-shirt or Carry?	Activity 9 - Directions linked here Planning for Change

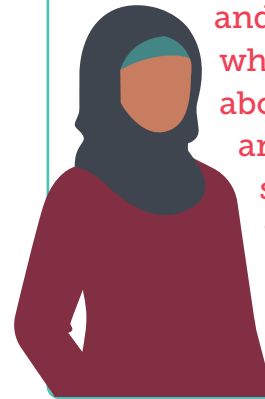
This board was inspired by Kasey Bell at shakeuplearning.com

Providing Student Choice Options

Classroom context from our testing:

A teacher, new to teaching eighth grade math, tested this change idea in his classroom where he was having a hard time connecting authentically with his students. He typically spent the majority of his time in the classroom teaching through direct instruction, which resulted in classroom management challenges.

With support from a math instructional coach, the teacher introduced student choice boards to his class to improve his instructional habits by utilizing more differentiated instructional practices. He also shared a brief personal story that connected to the topic for the day to ground the lesson and create an opportunity for connection with his students. This, in conjunction with choosing topics that were interesting to his students (e.g. climate change and college access), led to great uptake of the choice boards.



"I have not liked this class all year until now. After the climate thing and now this, [my teacher] sat down and talked to me while I was working about how I am living and what I like and stuff. I probably would have did more work"

8TH GRADE STUDENT

Before and after choice boards were implemented two times in one eighth grade math classroom, the teacher and instructional coach collected pre/post student perception data to understand the impact of the change idea:

- ▶ The percentage of students who reported that they felt some or total **control over their learning in math increased** from 46% to 83%
- ▶ The percentage of students who reported that they learn about **people and groups who work to make society better** increased from 4% to 67%
- ▶ The percentage of students who reported that they learn about **things in society that need to be changed** increased from 13% to 75%
- ▶ The percentage of students who reported that in their math class, they learn about **problems in society and what causes them** increased from 8% to 88%
- ▶ The percentage of students who reported that they believe that they can use what they've learned in math class that week to **achieve their life goals** increased from 38% to 58%

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Possible adaptations and decisions based on class context

There are many ways to differentiate instruction through the use of choice boards. Here are just a few examples:

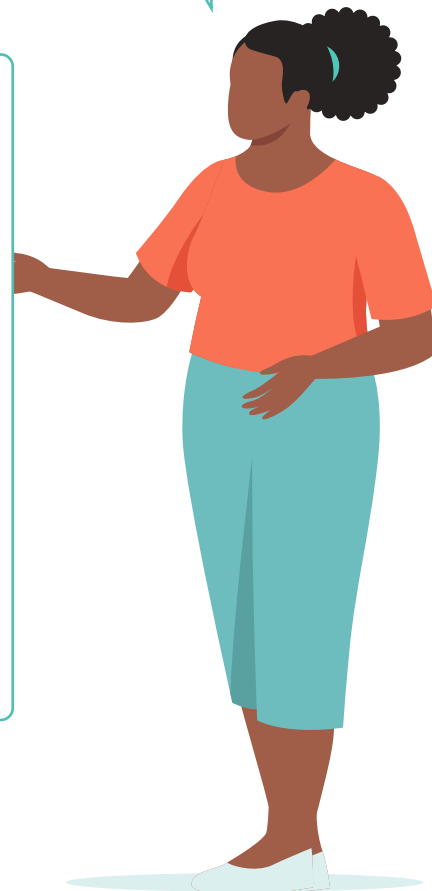
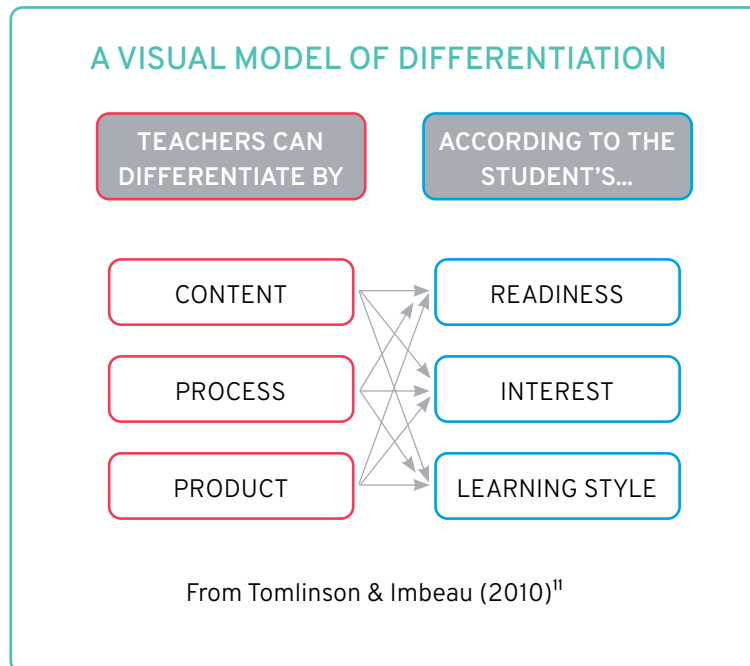
- **Content:** You can opt to have an entire choice board focused on one mathematical procedure (e.g. linear equations), or you can layer multiple procedures into the same choice board (e.g. both linear equations and linear inequalities)
- **Process:** How students share learning and make connections (individual work, small group collaboration, whole-class discussions)
- **Product:** “Level of polish” required in student work (e.g. “standalone” write-ups, poster papers/gallery walk)
- **Student Interest:** Intentionally select tasks that your students will find relevant and interesting. When introducing the choice boards, welcome student input for topics, concepts, or skills

they would like more practice doing to help with student interest and relevance. This is also a great activity into which to integrate social justice content.

- **Student Readiness:** All tasks can be equally challenging, or each row or column could have a different level of difficulty (think mild, medium, or challenging, where mild is less difficult and perhaps shorter task, medium is the middle of the road, and challenging is more complex to work through)

“Students want to do math when it’s personal to them.”

MIDDLE SCHOOL MATH INSTRUCTIONAL COACH



Providing Student Choice Options



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

- ▶ **Student choices** (count each choice)
Which did students gravitate towards/away from and why?
- ▶ **Exit Ticket / Assessment scores**
 - How much did students learn from the activity?
 - Were there some problems that were more instructive than others? (i.e. did students who made one set of choices do better on later assessments than others)?
- ▶ **Turn-in Rate**
 - How many students turned in assignments before using choice boards?
 - How many students turned in assignments after using choice boards?
- ▶ **Student perceptions of :**
 - Value/utility of choice
 - Sense of self-efficacy
 - Student agency, buy-in, investment
 - Relevance/interest in problems

See the example above for some starter questions to ask your students!

Connection to the Theory of Change

Driver 3: Instruction centers student experience and affirm their mathematics identities

Change Concept: Foster student voice and leadership in their learning

Want to learn more about other drivers and changes?

[Change Package](#)

[Theory of Change](#)

Appreciation and References

Thank You

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