



Mathematics Program Evaluation Webinar  
November 30, 2023

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Presented by  
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# Purpose

Assess the extent to which the Princeton Public School Mathematics Program provides an excellent mathematics education that encourages each student to achieve at a high level



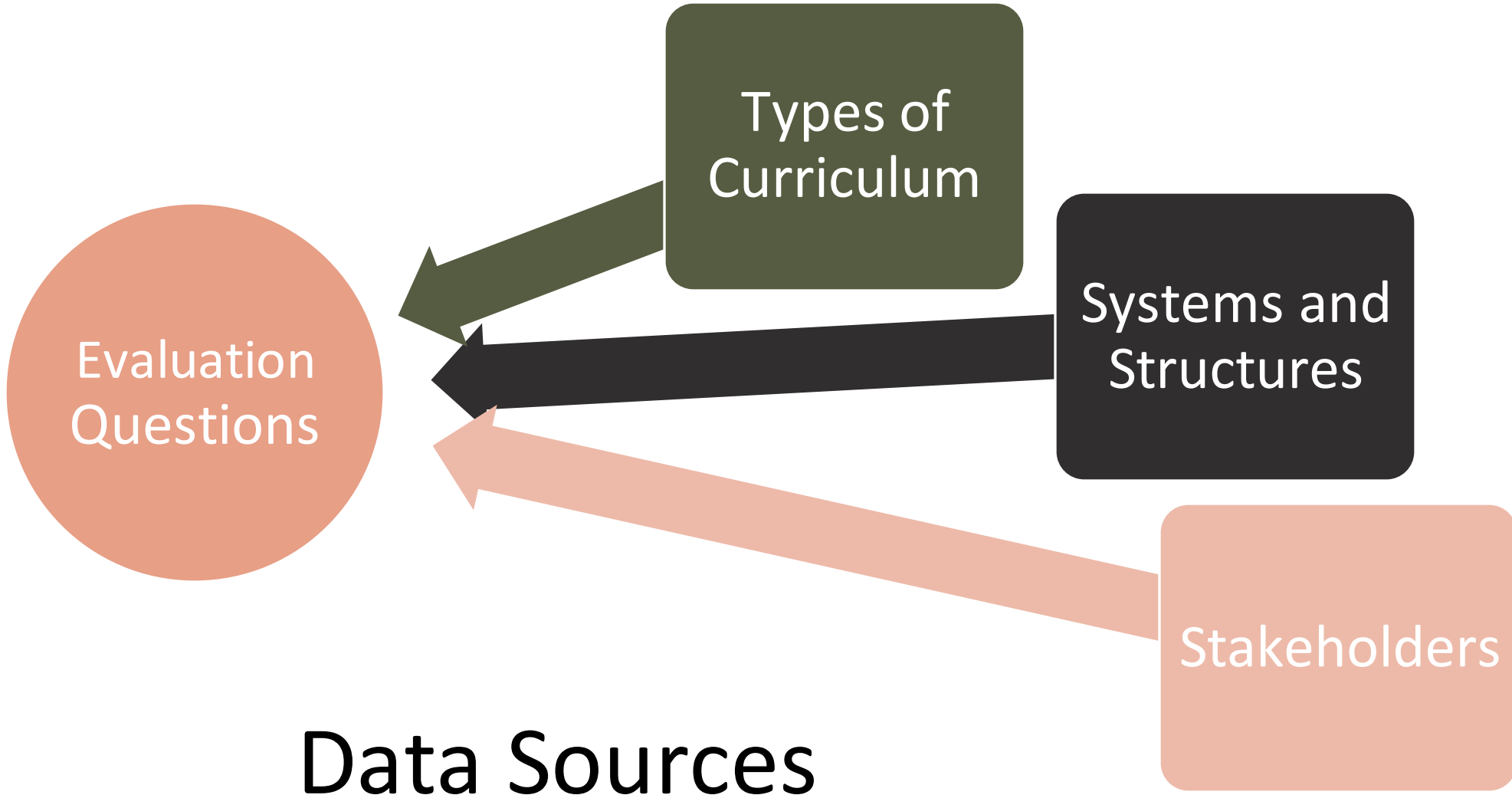
What instructional practices and routines do teachers use?

How are students provided with equitable pathways

How do students receive an excellent education

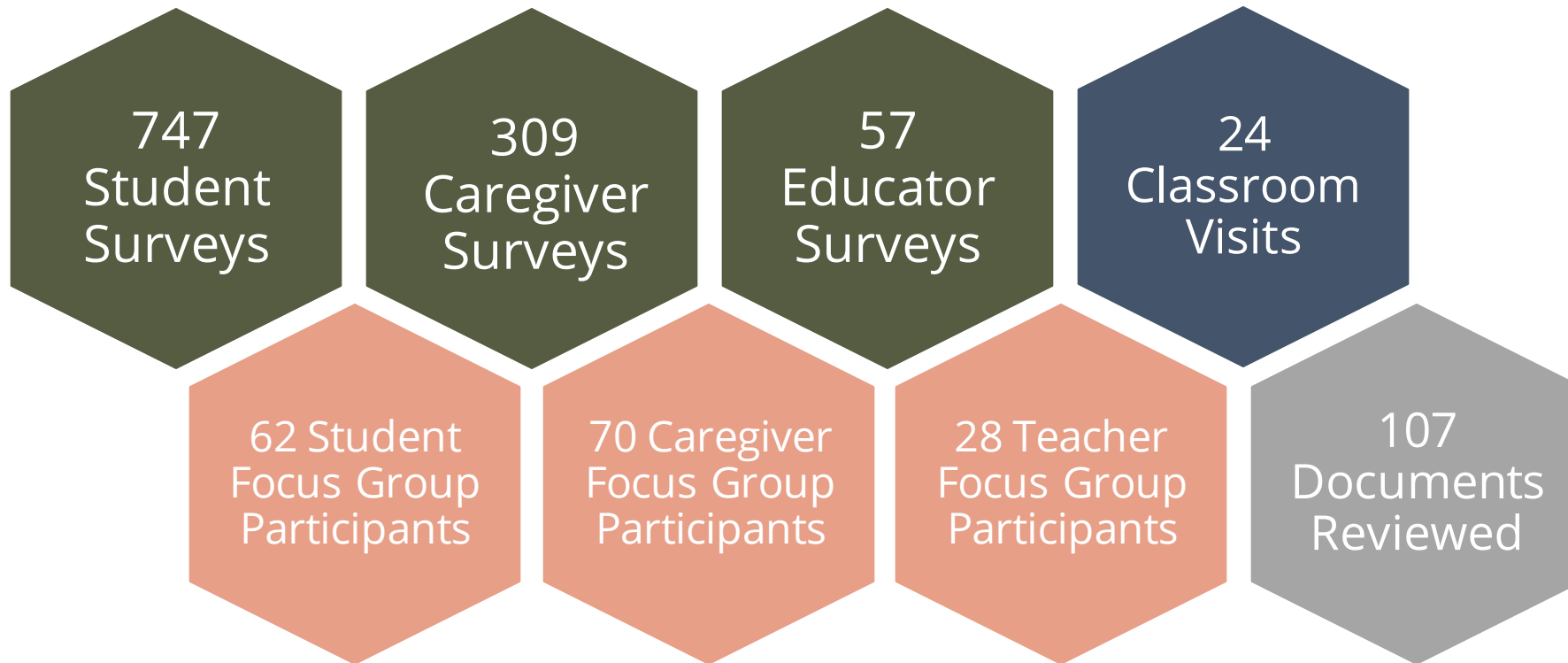


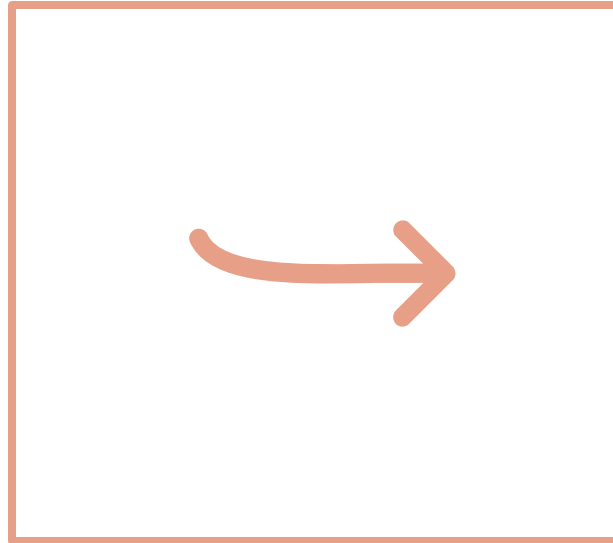
How do students prepare for and engage in rigorous computer science education?



# Data Collected

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# Program Strengths



# Strengths

- Dedicated educators, caregivers, Board of Education, community
- Strong written curriculum for secondary mathematics
- Some classrooms with effective teaching and learning practices
- Opportunities to take advanced classes
- Some support structures

I enjoy how our teacher tries to make math as easy or straightforward as possible. She also gives us different work so we can get better in different ways.

*Princeton Elementary School Student*

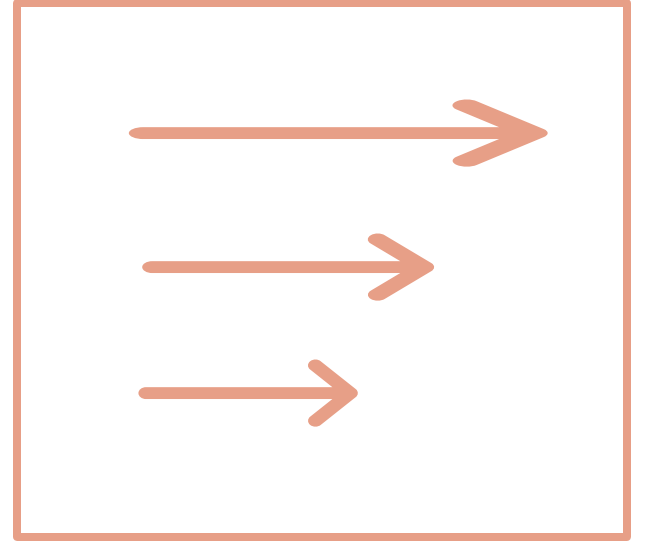
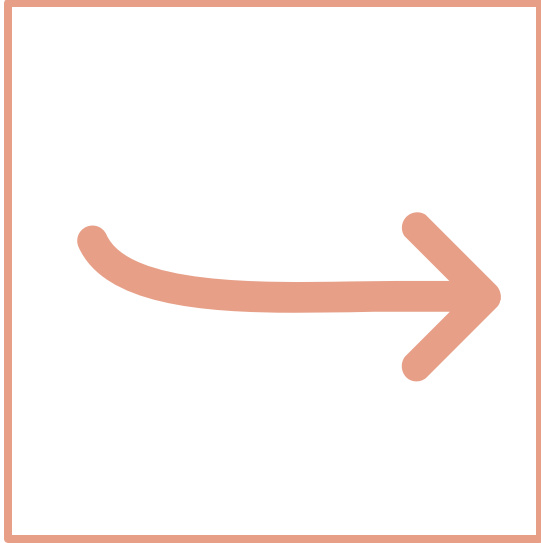
It has been very helpful that I have had teachers who expose me to the conceptual aspects of math instead of simply teaching me the application because I enjoy learning the "why" instead of just the "how."

*Princeton High School Student*

I think PHS has a great math department, easy access to tutoring in the Idea Center and all the teachers allow and encourage students who are struggling to meet with them during Tiger Time or break.

*Princeton High School Student*

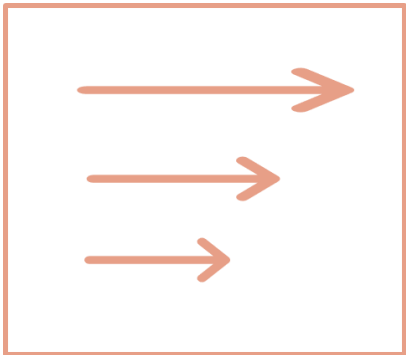




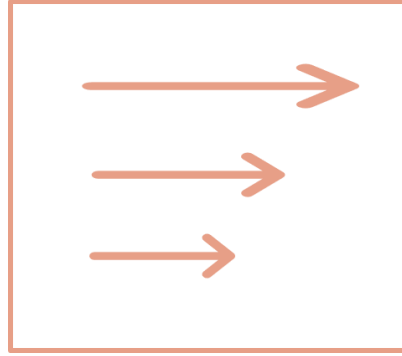
# Needs and Recommendations



Making systemic changes to the mathematics program can lead to a satisfying mathematics experience and positive learning outcomes for all students.



- Revise curricula
- Align systems
- Enhance teaching and learning practices
- Incorporate more differentiated instructional practices
- Strengthen supports
- Develop strong student mathematical identity and agency
- Increase the enrollment in advanced courses to reflect the demographics of the student population



## Recommendation

Refine the written curriculum to meet the unique needs of the Princeton Mathematics Program

# Elementary Curricula:

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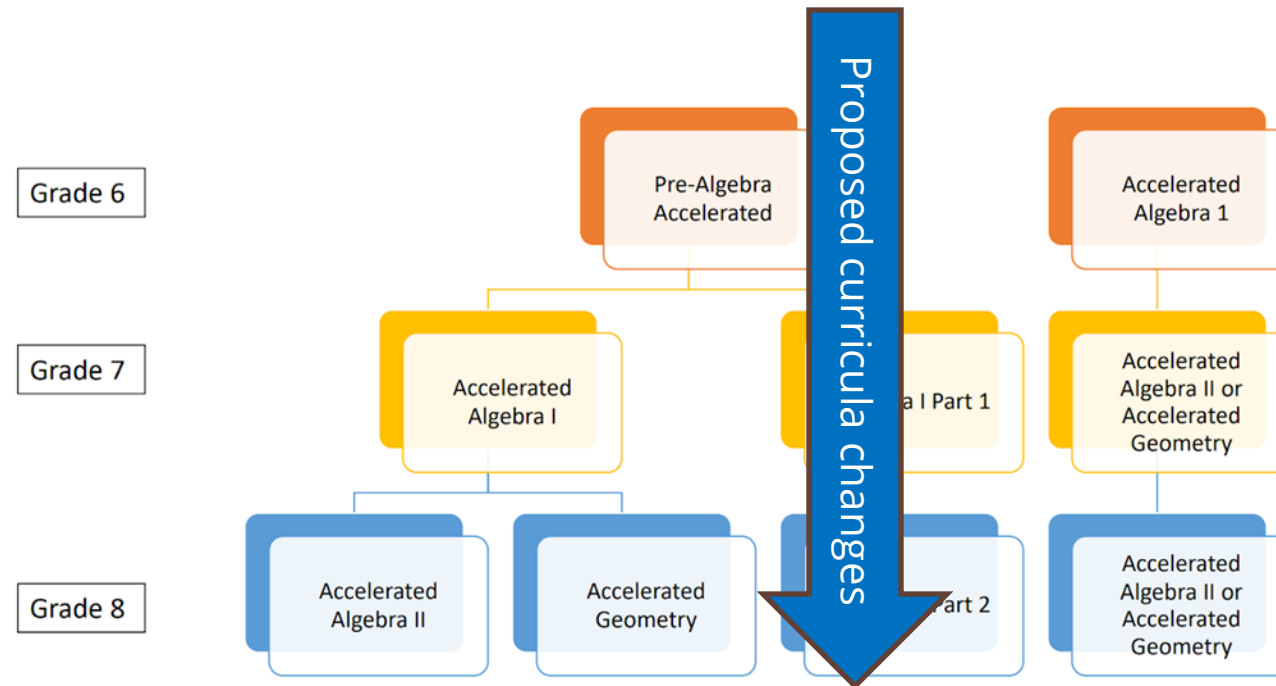
- address foundational principles of the New Jersey Learning Standards in Mathematics
- emphasize the standards for mathematical practice
- highlight grade level standards that develop algebraic thinking

I think the school could start focusing on problem solving and applications of math earlier. I think the school could also teach more skills and methods about how to learn and think about math in elementary school. This could help with problem solving, and help people approach complicated problems.

*Princeton High School Student*

# Middle School Curricula

## Math Courses at PMS for 2023-2024



# Proposed Middle School Curricula

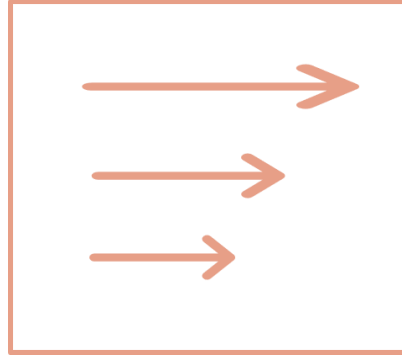
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Grade Level and Current Course	Standards				Culminating Assessment
	6 <sup>th</sup> Grade	7 <sup>th</sup> Grade	8 <sup>th</sup> Grade	High School	
6 <sup>th</sup> Grade (Pre-Algebra Accelerated)	√	√			6 <sup>th</sup> Grade NJLSA-M
7 <sup>th</sup> Grade (Algebra I Part 1)		√	√		7 <sup>th</sup> Grade NJLSA-M
8 <sup>th</sup> Grade (Algebra I Part 2)				√	Algebra NJLSA-M



“Appropriate acceleration must ensure that no critical concepts are rushed or skipped, and such decisions should not be based solely on traditional assessment instrument results (NCTM 2016).”





## Recommendation

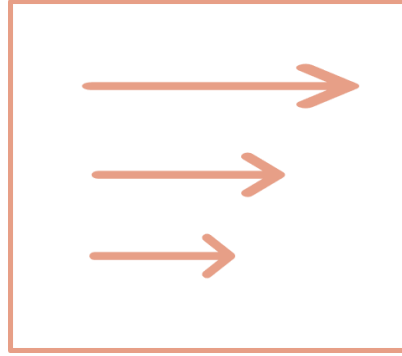
Align the assessment, grading and reporting, and course placement systems to strongly align with curricula

There is frustration with what is taught vs. what is assessed. There seems to be a widespread disconnect in many of the math courses between the class lessons and what shows up on tests and quizzes.

*Princeton Caregiver*

I think that more needs to be enforced when it comes to how things are taught, what is assigned, what is on the test, etc. It should be ensured that students receive timely feedback, support and encouragement, fair assessments that reflect what was taught.

*Princeton Middle School Student*



## **Recommendation**

Enhance teaching and learning practices and incorporate more differentiated instructional practices

## Curricula

- Learning progressions

## Student-Centered

- Mathematical practices
- Equity-focused instructional practices
- Classroom structures

## Data Informed

- LinkIt assessments
- Classroom formative assessments

## Support Team

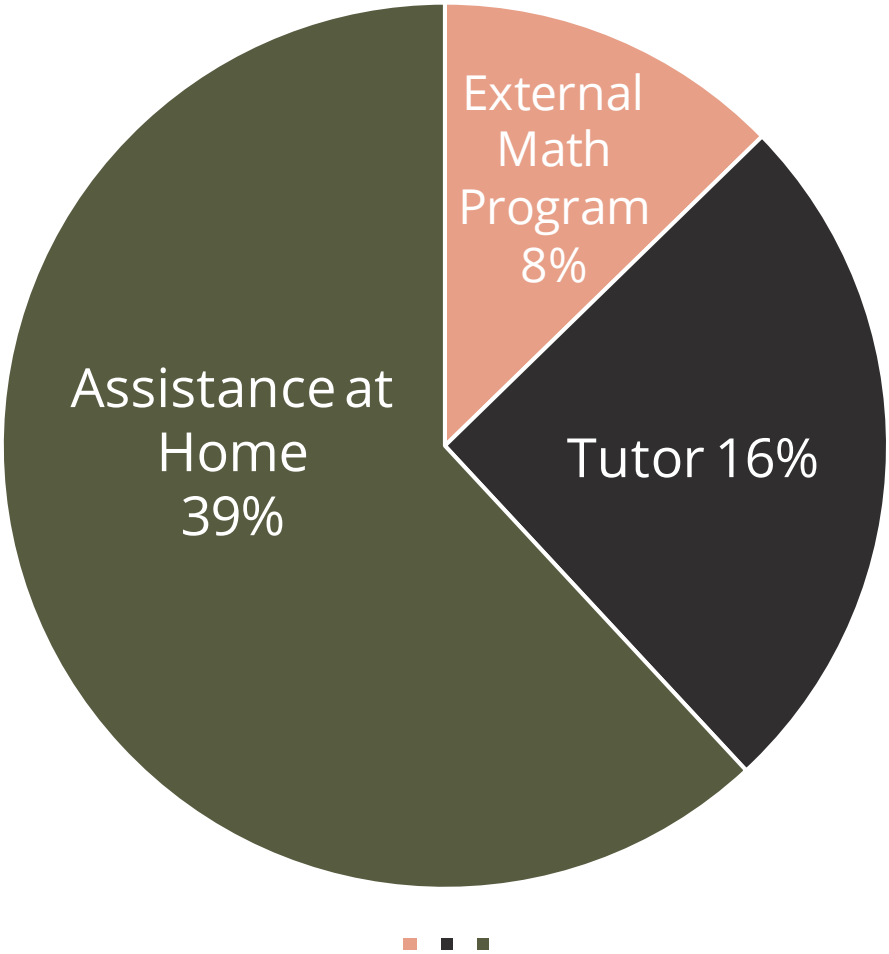
- Special area teachers
- Multi-Tiered System of Support



## Differentiated Instruction

# Support Outside School

63% of caregivers report that their children receive support in mathematics outside of the school day

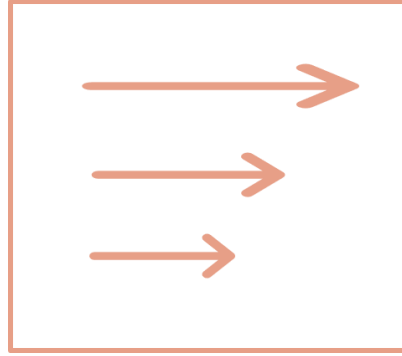


*There are kids who are going to a tutor or outside math teacher/class/etc. because they really \*enjoy\* math! And they want more math than the school is providing or at a level of challenge that the school is not providing.*

*Because the Princeton curriculum is taught at a high level, starting in 6th grade with Pre-Algebra, it forces parents to seek outside help tutoring in elementary school to make sure that they are prepared for the 6th-grade math curriculum.*



*Most families don't have the resources to pay for outside programming. What happens to them? My children had outside math tutors all the way through PHS because the schedule was so difficult to get the help they needed from their teachers. It's not enough time to just learn in the classroom, someone needs to help them go over the content.*



## **Recommendation**

Strengthen current support structures and create new mechanisms so all students' learning needs are met

I like the opportunities they have at the moment. I can go into the Ideas Center and ask for a free student tutor who can help me if I really need the help. That's pretty nice as it's not too big a hassle, and it helps both you and the tutor. It saves money. Like I said earlier, my teacher makes time to meet and sometimes lets us work outside which surprisingly helps me concentrate which is nice. I'm glad that he makes time for us to help us and it really does help.

*Princeton High School Student*

Even in an accelerated class, there should be more support for students struggling. I understand the fast pace, but measures should be taken to make a student feel better and feel as though they are improving. I received little to no feedback on progress.

*Princeton High School Student*



# Support Structures

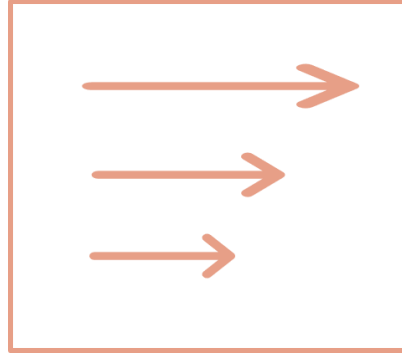
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## Current

- Individual Education Program (IEP)
- QUEST
- Multi-Tiered System of Support
- Advanced course offerings
- FOCUS, PAWS, Tiger Time
- Plus and the new support class at the middle school
- Multilingual support teachers
- Dual language immersion program

## Recommendation

- Leveraged more effectively
- Required, not optional
- Targeted strategies
- Access to specialized support teachers



## **Recommendation**

Develop strong student mathematical identity and agency

My passion and motivation for math has suffered because of this. If you are reading this you need to consider how people feel based on how much they invest into TUTORING or if their parents are math professors. If they have these advantages, they are not an accurate metric for test scores or survey results because they do not care about the math program insofar as REGARDESS OF THE TEACHER, THEY WILL DO WELL!!!! Consider those who suffer the most. In the end, those who have tutors or parents who do math will always excel, those who don't HEAVILY RELY on a good education system.

*Princeton High School Student*

Put more understanding into kids with 504 and IEP plans. I think many teachers do not care about them, and my opinion of those teachers drops substantially. It is sad that we prize inclusion yet do not spend enough time trying to help others feel so.

*Princeton High School Student*

I think the school could do better in helping each individual get what they need, since sometimes people are on different levels and understand things more. For the people who don't understand in those situations, they often feel like they aren't smart, so I think it would be beneficial to help with that.

*Princeton Middle School Student*

Math is sometimes really challenging. Some people in my class have made fun of me for getting a question wrong or a bad grade quiz, and it made me feel like I was bad at math, but I realized that I don't need to improve so that I can fit the likes of someone else.

*Princeton Elementary School Student*

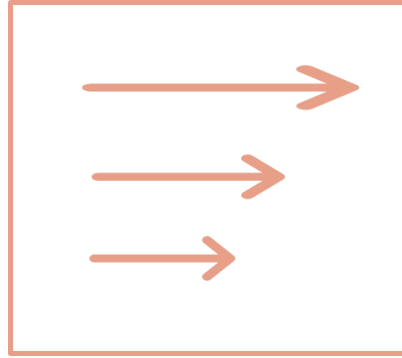
Schools should do a better job not letting people convince themselves that they're bad at math. It's too easy to get stuck in the mindset of "I'm not good at this so I won't try", and teachers should be helping kids get \*out\* of this mindset, not reinforcing it.

*Princeton Middle School Student*

# How do you develop student identity and agency?

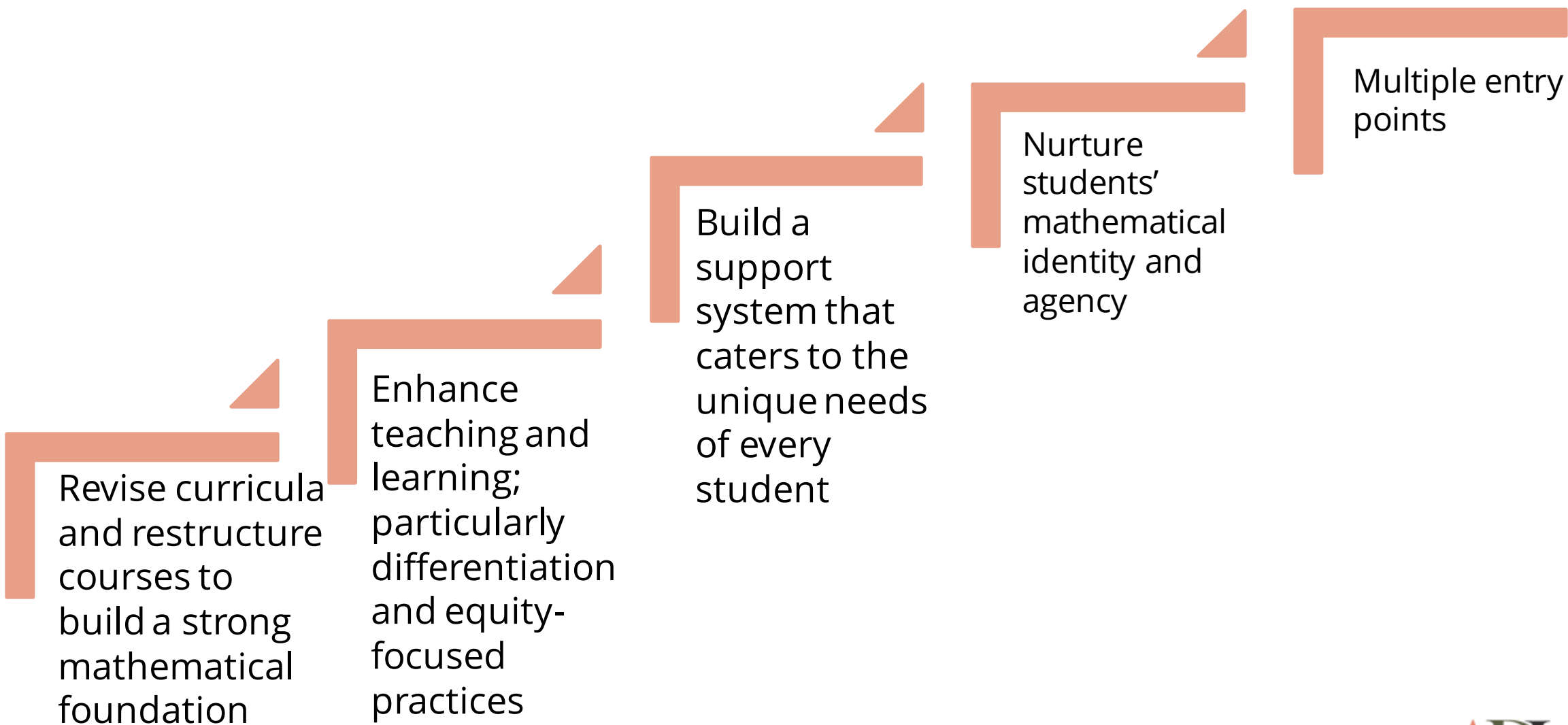
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- Tasks with multiple entry points
- Student-centered learning strategies
- Authentic application
- Student discourse
- On-going feedback
- Asset-based practices



## **Recommendation**

Increase participation across diverse racial, ethnic, gender, socioeconomic and ability groups, aiming to elevate the number of students who reach the highest levels of mathematical proficiency



Revise curricula and restructure courses to build a strong mathematical foundation

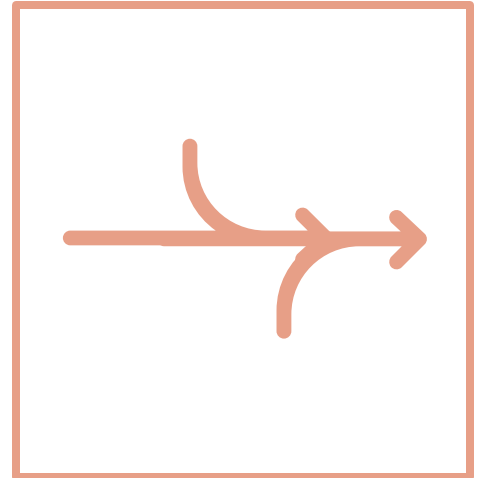
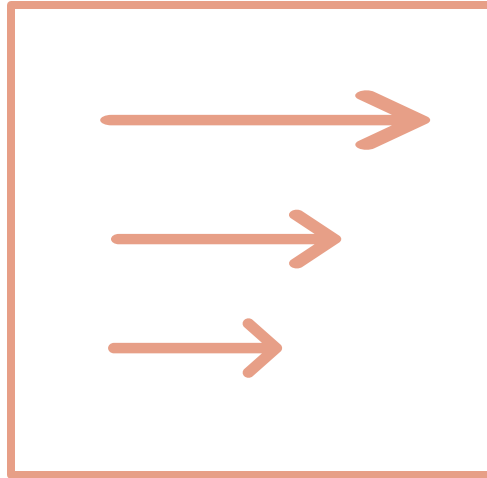
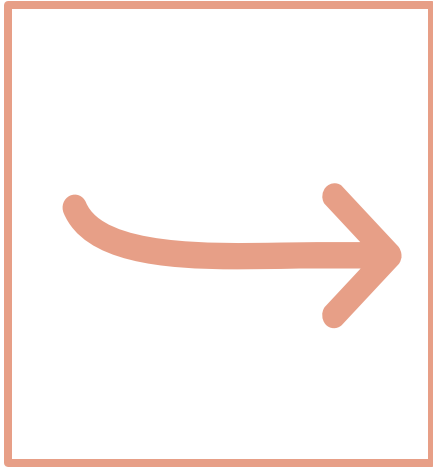
Enhance teaching and learning; particularly differentiation and equity-focused practices

Build a support system that caters to the unique needs of every student

Nurture students' mathematical identity and agency

Multiple entry points

Develop productive beliefs to support all students in achieving high-level mathematics



Next Steps



Collective  
Efficacy

Coherence

Collaboration

Communication



# Collective Efficacy

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Collective efficacy is the shared belief or perception among a group of individuals that they can collectively achieve desired goals, overcome challenges, and make a positive impact through their combined efforts.

# Coherence: Mission and Vision

It is the responsibility of all stakeholders to understand the direction and long-term objectives of the mathematics program and work towards achieving its goals.





# Collaborate

- Leverage teacher expertise
- Provide opportunities for planning and discussion across grade levels and for teachers of the same course
- Ensure participation from special education teachers, educators of multilingual learners, and other specialized support staff



# Communication

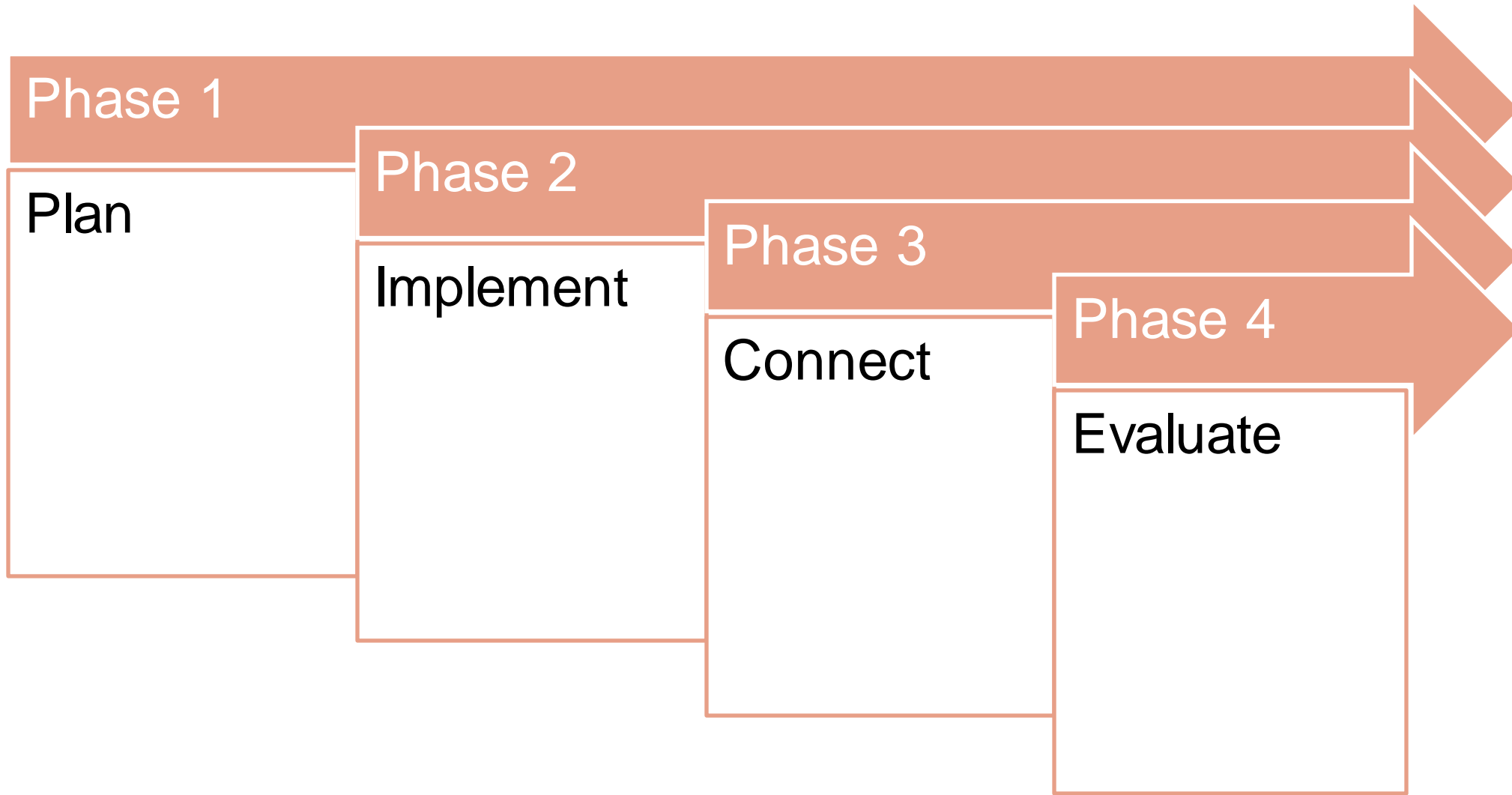


Communication must be improved to build trust and confidence that the mathematics program will meet the needs of all students.



Systemic adjustments are needed to achieve the goal of Princeton Public Schools. These adjustments require an understanding by all stakeholders and the realization that it will take time.

“(Feedback will) generate positive momentum in building trust of self, trust of colleagues, and trust of the system, as well as trust of our students, in the years ahead.”

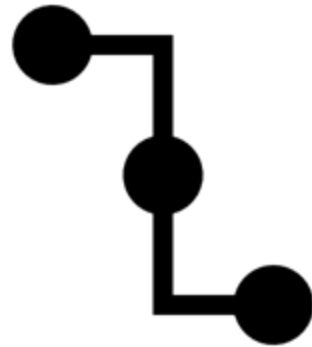




Questions



Clarifications



Connections

# Discussion

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Educators, caregivers, students and the Board of Education are passionate about mathematics. Their dedication to high-quality mathematics can be fostered to develop the collective efficacy needed to build a mathematics program that addresses the needs of all learners. Through collaboration and the development of productive beliefs about mathematics education, stakeholders can take actions in alignment with those beliefs that will enhance the learning outcomes for all students within Princeton Public Schools.

Thank  
You