Action Plan & Interventions In Response to Start Strong Data

Hackensack Public Schools
School Year 2021-2022

HIGH SCHOOL ACTION PLANS

- Used meeting time to develop a school-wide, data analysis of Start Strong Data.
- Teachers in each discipline determined instructional moves they will take to improve students' reading of Informational Texts.
- Social Studies teachers are focusing on *Claim Evidence* and *Drawing Conclusions*.

MIDDLE SCHOOL ACTION PLAN

- Teachers in some disciplines have begun to review the Start Strong Data using a protocol developed by District Supervisors. Some of the areas identified were *Making Logical Inferences; Drawing Conclusions; Recognizing and Understanding Text Structures,* and *Analyzing Cause and Effect Relationships*.
- The remainder of teachers in the other disciplines will begin this work in February 2022.

ELEMENTARY SCHOOLS ACTION PLAN

- Vertical teams will meet to determine the priority skills to focus on for a determined period of time. ~ Fairmount School
- Grade-Level Teams will meet to review Start Strong Data and determine a grade-level focus based on trends. ~ All elementary schools

MATH ACTION PLAN (GRADES 5-12)

Weekly PLC Time for Teachers to review Dynamic Formative Assessment data: Teachers will meet in PLCs of 3-5 teachers at a minimum of one time per week to examine student work in order to identify a problem of practice and develop an action plan to target the problem of practice.

a. Background Info: Currently teachers are reviewing purely numerical data, from which it is very hard to draw conclusions, much less use it as a reliable tool for decision-making. This type of data is known as "static assessment data." Instead, teachers will use "dynamic assessment data," by directly **examining student work.** Also, currently, teachers are moving straight from identifying a learner-centered problem to creating an action plan. This is missing the logical intermediate step of identifying a problem of practice. The *Data Wise* cycle (or any other similar tool, such as *Teaching Sprints*), will emphasize the important step of teachers examining their practice before drafting steps for improvement. Quay (2019) - Sustaining a Continuous Improvement Culture in Educator Preparation

b. Research: Typically, assessments are static; they measure a moment in time—how a child scored on a given item on a given day. In contrast, dynamic assessment is continuous and informs about the zone of proximal development (Vygotsky 1978). It foresees "where and how one can anticipate that which is just coming into view in the distance" (Streefland 1985). It captures genuine mathematizing and development—children's strategies, their ways of modeling realistic problems, their understanding of key mathematical ideas. In essence it captures where they are on the landscape and offers implications for instruction. Fosnot (2010) - Models of Intervention in Mathematics (Ch. 4)

MATH ACTION PLAN (GRADES 5-12)

Implementation of Peer Tutoring: Students will be trained as peer tutors to use questioning techniques in support of structured peer tutoring during and outside of the school day.

a. Research shows that peer tutoring serves a dual purpose of both increasing academic achievement as well as reducing math anxiety.
   Alegre (2020) - Academic Achievement and Peer Tutoring in Mathematics
   Moliner (2020) - Peer Tutoring Effects on Students' Mathematics Anxiety: A Middle School Experience

DISTRICT-WIDE INTERVENTIONS

Formative Classroom Assessment Data allows teachers to monitor students' learning day-by-day and minute-by-minute. Research supports these actions in every subject area. Teachers use this to adjust their teaching; to give specific feedback on student work they observe during instruction; and to provide targeted help to students who need it.
Source:
https://www.gettingsmart.com/2018/07/09/the-research-base-for-formative-assessment/#:~:text=The%20researchers%20found%20%E2%80%9Cfirm%20evidence,by%20the%20%E2%80%9Ceffect%20size.%E2%80%9D

Source: Using Data to Improve Learning for All: *A Collaborative Inquiry Approach*, Nancy Love, Editor

- Science classes (Grades 5-12) are focused on developing science literacy through three-dimensional instruction as outlined in the New Jersey Student Learning Standards. Asset based feedback will be introduced to monitor student thinking for purposes of formative assessment.
- Access, modify, enrich and reteach lessons based upon individual student needs - Parker School
- Teachers will use a feedback protocol for conferring/conferencing with students to help students set targeted goals for their learning needs. Growth in this area will be monitored through individual conferring sessions with students. - All Elementary Schools

MATH INTERVENTIONS

1. **Promotion of Conceptual Understanding in Mathematics Instruction**: Procedure-based instruction will be replaced with instructional tasks that will promote conceptual understanding. Conceptual understanding allows students to make meaning of the mathematics they are doing rather than memorize procedures that may not make sense to them.

    a. Journal Article on how procedural understanding is built from conceptual understanding: Smith (2018) - Promoting a Conceptual Understanding of Mathematics
    b. Journal Article on distinguishing between the arbitrary and the necessary in mathematics instruction and the negative impacts when the necessary is taught through direct instruction rather than built conceptually: Hewitt (1999) - Arbitrary and Necessary

MATH INTERVENTIONS CONTINUED

1. **Use of Multiple Representations in Mathematics Instruction**: In implementing instructional tasks that promote conceptual understanding, teachers will use multiple representations/models (physical, visual, symbolic, contextual, and verbal) to support students in deepening their understanding of mathematics.

    a. Journal Article: Multiple representations begin in Kindergarten where students are expected to use manipulatives, pictures and drawing, through high school modeling of functions through verbal, symbolic, graphical, and tabular representations. The modeling of mathematics is highly recommended as a way for students to represent their understanding of mathematical ideas (Cirillo, Pelesko, Felton-Koesteler & Rubel, 2016). Cirillo (2016) - Perspectives on Modeling in School Mathematics

    b. Journal Article: Representational competence includes being able to convey a mathematical idea in various forms (Ellsworth and Sindt, 1994), knowing when and why it is appropriate or valuable to use particular mathematical representations (Marshall, Supergine, & Canty, 2010), being able to translate between and within modes of representations (Lesh, Post, & Behr, 1987), and being able to use representations flexibly to solve problems (Greeno & Hall, 1997). Huinker (2015) - Representational Competence: A Renewed Focus for Classroom Practice in Mathematics

MATH INTERVENTIONS CONTINUED

Use of Manipulatives in Mathematics Instruction: Mathematical manipulatives will be used whole-class and in small groups every day to support students in understanding representations of mathematical concepts. Manipulatives include, but are not limited to, algebra tiles, geometric models of proofs, patty paper, pattern blocks, double number lines, millions charts, and probability tools. Interactive online manipulatives such as Desmos, Geogebra, and Mathigon Polypad will also be used to support student understanding.

a. Research: “Humane education of all children: one that both gives children opportunities to think, explore, and make sense of problems in their own ways and ensures that teachers have the tools to support such rich learning environments.” Rigor and deep understanding develop from opportunities to explore topics deeply. The commercial packages that schools buy do not always use powerful tools such as math racks (rekenrekken), open number lines, and ratio tables. Often these must be supplemented with more robust tools. (Fosnot, 2010) Fosnot (2010) - Models of Intervention in Mathematics (Preface)

MATH INTERVENTIONS CONTINUED

Implementation of Small Group Instruction: Teachers will group students flexibly to give them extra support in smaller groups as an effective way to create differentiation in the classroom setting. Guided group work differs from traditional “tracking” in that the groups exist to promote discussion on a few concepts to support development.

a. Research: At times forming flexible small groups is helpful to give children more opportunities to explore specific topics that challenge them. Examples show how and why teachers form such groups, the focus of the work they might do together, and how the group work supports children and ensures that all members can contribute to whole-group class discussions. Fosnot (2010) - Models of Intervention in Mathematics (Ch. 5)

MATH INTERVENTIONS CONTINUED

Use of Formative Assessment - Research indicates the following conclusions:

- Formative assessment produces greater increases in student achievement and is cheaper than other efforts to boost achievement, including reducing class sizes and increasing teachers' content knowledge.
- Formative assessment that occurs within and between instructional units (medium-cycle assessment) as well as within and between lessons (short-cycle assessment) has been shown to improve students' achievement. Formative assessment across marking periods, quarters, semesters, or years (intervals of four weeks to one year) has not been shown to improve students' achievement.
- In classrooms where medium- and short-cycle formative assessments were used, teachers reported greater professional satisfaction and increased student engagement in learning.

Source: National Council of Teachers of Mathematics: https://www.nctm.org/Research-and-Advocacy/Research-Brief-and-Clips/Benefits-of-Formative-Assessment/

MATH INTERVENTION FOR SCHOOL YEAR 2022-2023

Programmatic Change in High School Mathematics: Incoming 9th grade students identified as in need of intervention will be enrolled in a double-period Algebra 1 class starting in the Fall of 2022. The goal is to provide this subgroup of students with quality instruction that will have them on grade level after one year and prepared to integrate into Geometry with their peers in 10th grade.

a. Background Info & Research: The current structure is that those students take a no-credit-awarded course that is not aligned to the grade-level NJSLS. Then in 10th grade they are enrolled in Algebra 1. Due to the two-year nature of this programming, it takes students that are struggling and puts them another year behind their peers. Research shows that this approach moves students backwards by continuing to widen the academic gap between students who are being remediated and their grade-level peers (Rollins, 2014). Rollins (2014) - Learning in the Fast Lane