BHM SCHOOLS
Buffalo Hanover Montrose

K-5 MATH

2024 CURRICULUM ADOPTION PROPOSAL

BACKGROUND OF PROGRAMMING IN BHM SCHOOLS

- Summary of last adoption request for historical perspective
    - Pearson's enVisionMATH program was implemented in 2010-2011 school year. The MN Math standards were updated in 2007 and enVisionMATH was selected to support the math standards. Prior to 2010, Everyday Mathematics was the K-5 program used in the district. The switch to enVisionmath was positive but also challenging as teachers and students learned a different program.
    - The MN State Standards were scheduled to be reviewed again during the 2015-16 school year, but the review was postponed in the spring 2015 first special legislative session.
    - In 2017, Pearson was planning to discontinue the edition of enVisionMath that was in use. The district was able to negotiate an update at a discount to the 2017 version called enVisionmath 2.0. This update had consumable books for all grade levels and previously grades 3-5 had hardcover books that students copied problems. The updated version was based on Common Core State Standards and supplemental lessons were created to meet MN specific standards.
- Rationale for need
    - Minnesota State Standards for Math have been revised. The third draft of the standards is currently in rulemaking. There are shifts from just knowing skills to being able to apply skills. The new state standards emphasize preparing students for career, college, and community readiness. Below is an excerpt from the Minnesota K-12 Academics Standards in Mathematics (Third Draft) that illustrates why we need to update our math program.
    - "Minnesota career, college and community ready students will:
        - Be curious, pose questions and seek patterns in order to make sense of their world.
        - Communicate their mathematical thinking and contribute to high level math discussions.
        - Be persistent, flexible, collaborative and creative problem solvers.
        - Make connections between mathematics concepts and other disciplines, experiences outside the classroom, interests and career aspirations, as well as the connections amongst mathematical ideas.
        - Build conceptual understanding, thinking and reasoning in order to develop procedural fluency and flexible problem-solving strategies.

        - Collaborate with cultural perspectives and traditions like and unlike one's own, allowing students to make sense of mathematical concepts and value various mathematical identities connected to lived experiences.
        - Solve problems connected to place, story, cultural practices, language and perspectives relevant to historical and contemporary Dakota and Anishinaabe communities. (Minnesota Statutes 2021 120B.021)" p. 2
    - Our current math program is out of date and the current annual renewal cost consumes a large portion of the current T&L budget for teacher online access and student math books. A new program is needed to be more cost-effective and to up-to-date with current best practices in mathematics. A newer program will help prepare students to be career, college, and community-ready.
    - When enVisionmath was originally purchased, K-2 expressed concerns about the lack of hands-on opportunities and worked to incorporate those. Teachers have stated that they supplement with games and other activities. enVisionmath 2.0 had limited opportunities for students to review past content and preview upcoming standards.

PROGRAM STANDARDS

- The Minnesota State Standards revised in 2022 are expected to be implemented in the 2027-2028 school year. The next revision of standards is expected in 2032.
- There are notable changes from the 2007 to the 2022 math standards.

	2007	**2022**
Strands	1. Number & Operation 2. Algebra 3. Geometry & Measurement 4. Data Analysis (Probability is added at 6th grade)	1. Data Analysis 2. Spatial Reasoning 3. Patterns and Relationships
Anchor Standards	None	• Data Sciences • Change and Uncertainty • Measurement • Geometry • Number Relationships • Equivalence and Rational Thinking • Patterns and Relationships
Standards of Mathematical Practices	Not included	• MP1: Make sense of problems and persevere in solving them. • MP2: Reason abstractly and quantitatively. • MP3: Construct viable arguments and critique the reasoning of others. • MP4: Model with mathematics. • MP5: Use appropriate tools strategically.

		• MP6: Attend to precision. • MP7: Look for and make use of structure. • MP8: Look for and express regularity in repeated reasoning.
Example: 3rd Grade	Solve real-world and mathematical problems involving multiplication and division, including both "how many in each group" and "how many groups" division problems.	Represent and solve contextual situations involving multiplication, measurement division and partitive division with single-digit factors using visual models. (MP1, MP4) $ μ ☼ {3.OA.A.3} |3.ARO.3|
Example: 5th Grade	Order fractions and decimals, including mixed numbers and improper fractions, and locate on a number line.	Compare and order decimal values to the thousandths. Justify using place value language and visual models. (MP3, MP4) $ {3.NBT.A.3b}

- The proposed program, Bridges, supports the big shifts in the MN state standards. Like other programs, it isn't aligned specifically with the 2022 MN State Standards for Mathematics. There will be some content and skills that will need to be addressed. Through partnerships with other large metro districts, we can work to address the missing pieces.

PROGRAM VISION STATEMENT

Children have innate mathematical abilities that need to be fostered through a variety of mathematical experiences. At BHM students will...

- See themselves as doers of math through carefully facilitated discussions.
- Have opportunities to persevere through solving a variety of math problems.
- Collaborate and justify their mathematical thinking by showing flexibility in strategies and making connections.
- Build conceptual understanding and procedural knowledge through large group, small group, and individual support and instruction.

SUMMARY OF PROCESS FOR REVIEW OF INSTRUCTIONAL RESOURCES

The district's Continuous Improvement Process (CIP) requires a comprehensive review of needs, educational research, and potential materials before making a recommendation in the Curriculum Adoption Proposal. During the CIP phases of RESEARCH and PILOT over the past three years, the K-5 Math CIP Team engaged in the following activities:

- Research instructional practices
- Monitoring the development of the 2022 math standards
- Creating and updating the vision statement
- Screening of potential materials
- Piloting potential resources

In 2021-2022 school year, the K-5 Math CIP team began reviewing a variety of math programs. The team surveyed the surrounding school districts to see what materials were in use. The team reviewed edReports as a way to filter the numerous programs available down to a manageable number to preview. The team previewed 7 programs in the fall of 2021.

Based on the edReports, speaking to area school districts, and previewing samples, it was decided that the team decided to focus on 4 of the programs. The team listened to vendor presentations from enVisionmath 2020 edition, McGraw-Hill Reveal, Illuminate's Eureka Math, and The Math Learning Center's Bridges. From those presentations, the team determined it would be beneficial to move ahead with piloting Reveal and Bridges. The 2020 version of enVisionmath was similar to the 2017 edition and the team felt they didn't need to pilot.

During the 2022-2023 pilot year, 23 teachers agreed to pilot both programs. They received initial training in the summer of 2022. Follow-up meetings and additional resources were provided by each vendor. Teachers piloted each program for about 2 months. Some teachers took part in another teacher modeling a math lesson for them in their class. When teachers switched programs, there was another training for the next program. Teachers were asked to reflect on the 1st program before starting the 2nd one. At the end of the pilot, teachers were asked to attend a meeting at their building to share their experiences with both programs. Teachers had a resource evaluation sheet that they could use to document their experiences.

The summary of teacher feedback on the initial pilot can be summed up as...

Pros

- Bridges - hands-on, fun, higher order thinking, variety of strategies, games, rich discussions.
- Reveal - Doesn't take time to teach, manageable, teach strategies, routine

Cons

- Bridges - takes teacher time, less routine, limited technology, 80 minutes for math, jumping in mid-year felt disjointed for some pilot teachers
- Reveal - lessons are short, need to supplement, collaboration time isn't built in, games were time-consuming to put together, could teach without using manipulatives

At the end of the pilot, The Math Learning Center that publishes Bridges announced that a 3rd edition was going to be released soon. The decision was made that Bridges had many positive qualities, but the amount of teacher preparation time and some teachers not experiencing Bridges at the start of the year seemed to be factors in some teachers' opinions of the program. The 3rd edition of Bridges was being organized to support teachers in having less reading to do to prepare for the lessons and a better organization of some of the materials. A trial run was needed of the 3rd edition of Bridges to determine its usability of the new program. A team of 13 volunteered to try out the updated version. Additional professional development and resources were provided to these 13 teachers for the 2023-2024 school year.

Additional supports and resources included:

- August time
    - 1 day of facilitated unpacking of materials in their classrooms provided virtually
    - 1/2 day of unit planning and building background on the program as a team
    - 1/2 day of time in their classrooms to organize, prep, and plan individually
- Weekly newsletter that provided updates to Bridges resources, reminders of upcoming events, and links to articles about math instruction
- Virtual sessions after school were offered 2 times each month. These sessions were an opportunity to ask questions, share ideas, and learn more about the program
- Classroom visits and modeling opportunities were provided by T&L. Some teachers invited T&L to observe their classrooms and then to discuss their experiences. A few teachers invited another teacher in to model a lesson with their students to see another teacher in action.
- Individual and small group feedback was gathered throughout the Trial Run time. The team gathered after school in December to review the feedback and to determine if Bridges should be recommended for K-5 math adoption.

RECOMMENDATIONS

- The Trial Run team would like to recommend The Math Learning Center's Bridges be adopted as the K-5 math program starting in 2024-2025. Bridges is composed of a 60-minute lesson time and a program called Number Corner that is similar to calendar math. Number Corner can be used with any program but Bridges depends on Number Corner to maximize student learning.
- The main benefit of adopting Bridges is the increased mathematical thinking seen in students. The program provides multiple opportunities for students to engage in productive struggle and to learn about the world around them. Many of the math activities are "high ceiling, low floor tasks." These tasks provide an entry-level problem or discussion that high and low ability students can participate in. The students have fun in math, the hands-on opportunities provide a play atmosphere, and students are learning to engage in meaningful conversations.
- Other benefits of Bridges that teachers listed are an increase in conceptual understanding, more innovative thinking about strategies and solutions, and an increase in student confidence and engagement. Students often have choice during work place time and can advocate for their needs. Bridges supports the recently adopted Portrait of Graduate.
- Some of the potential challenges include the storage of materials. Teachers will have many math manipulatives that students will be able to use to deepen their understanding of math. Teacher time to adjust to the lesson formatting and read the lesson plans. The 1st year will be an adjustment for grades 4 and 5 as students will not have had the previous years to gain an understanding of the math strategies. Teachers are concerned about the number of copies they might be making in the 1st year. Another challenge is fitting 80 minutes of math into their day. Standards alignment will need to be examined with the current and future MN state standards.

FINANCIAL IMPLICATIONS

K-12 Spreadsheet template for requests

EVALUATION

Evaluation of the curriculum adoption will be monitored in several ways. Some of the anticipated desired

outcomes include:

- aMath scores will be monitored from year to year
- MCA scores and benchmark reports will be reviewed to see if any significant changes occur.
- There are a variety of assessments available in Bridges that can be used to monitor student achievement. These will be evaluated to see which ones will provide the district with data to monitor student progress
- Teachers will be asked to provide input on implementation over the course of the year. Implementation will be a multi-year process for students and teachers.

NEXT STEPS

- Materials will be ordered before July 1, 2024 but payment will not be processed until July 2, 2024. The Math Learning Center will then ship as soon as possible. Anticipated that materials will arrive by early August.
- Teachers had an opportunity on January 26 to hear from teachers who have been using Bridges this year. They visited their classrooms, heard success stories, and listened to the challenges that the teachers worked through this year. On March 29, 2024, teachers will have an opportunity to continue learning about Bridges through an online module that includes an overview of Bridges and Number Corners along with time for personal reflection. After the module, teachers will have an opportunity to start planning for shifts in math instruction and the arrival of math materials.
- In 2024-2025, the district time for K-5 classroom teachers will focus on math. There will be a combination of math professional development from The Math Learning Center, time for unit planning with PLCs, and individual time to reflect and prepare. Along with optional virtual check-ins and additional support as identified by teachers and administrators. Teachers will have guidance on which components they should be implementing as the year progresses. In year 2, additional guidance will be provided to support the continued implementation of instructional practices.
- Additional support will be provided to support special education teachers, Educational Support Professionals, and substitute teachers as they will have questions and wonderings about the new program.