Ashland Public Schools

Math

Curriculum Review Plan

Introduction

The Ashland Public Schools is committed to the pursuit of academic excellence for all students. Our Blueprint for Continuous Student Improvement drives the work that we do every day to ensure that we meet this goal. The development and implementation of a clearly articulated curriculum in all subject areas is essential for success. In order to make certain that the current curriculum meets the needs of our students, is taught to fidelity, and is aligned to the standards, the district has created and adopted a curriculum review process. During this comprehensive process, teachers review essential questions, data, test results, staffing levels, and professional development and create a self study by grade level and building. The following self study was conducted for Math. It highlights strengths and areas of concern across all grade levels. This self study informs an action plan to address the needs of the Math curriculum and its instruction.

Committee Organization

The following are the members of the Math CRP Self-Study Team:

Paul Vieira	Assistant Superintendent	Central Office
Lori Freeman	Liaison	Warren
Amy MacDonald	Assistant Principal	Warren
Taryn Marquez	Teacher	Warren
Nancy Mantos	Teacher	Warren
Michelle Aldoupolis	Liaison	Mindess
Claudia Bennett	Assistant Principal	Mindess
Katie Evans	Teacher	Mindess
Karen Bernier	Liaison	Middle School
Dave DiGirolamo	Principal	Middle School
Kristen LaMothe	Teacher	Middle School
Lauren Carreiro	Dean	High School
Katie Eburn	Teacher	High School
Mike Shennett	Liaison	High School

Timeline

This committee first met in November to establish norms and create essential questions to be asked of all teachers in the department. Throughout January, teachers responded to these questions in both survey form as well as during round table discussions that occurred at each grade level. Teachers met in their schools and wrote the self study which was submitted in early March. Throughout the first three weeks of April, principals and teachers reviewed the self study to validate the findings. This validation process was critical to ensure that the information presented accurately represents the work that is being done in each building and grade level. The final product was produced and presented to the School Committee in the Spring of 2018.

Summary

The following chart highlights the areas of concern and recommendations as determined through the self study by each of the schools along with potential remedies, timelines, and responsible staff. Full self-study details by school follow at the end of this document.

School	Concerns/Recommendations from Self Study	Action Items/ Measurable Outcomes	Timeline	Person(s) Responsible	Resources Required
Warren	Provide enVisions Professional Development with emphasis on: ● support in implementing guided math to a range of learners within the classroom (ELL, SPED, advanced and below level students) ● analyzing data ● using supplemental materials for students with disabilities and ELL students ● fact fluency and number talks	Create and implement a 2 year PD plan.	Fall 2018	Assistant Superintendent Building Admin Liaison Teachers	Time Financial
Warren	Develop additional math supports to continue supporting our most struggling learners across the grades. Collaboration time between Title One personnel and classroom teachers is also recommended to ensure continuity of the instruction.	This goal will be incorporated with the PD Goal and our Curriculum Mapping Goal.	Fall 2018 to Spring 2020	Assistant Superintendent Building Admin Liaison Teachers	Time
Warren	Review assessment tools, testing protocols, and data entry. Create processes for analyzing data within grade levels and vertically; this includes having cross-grade classroom visits.	Establish a Curriculum Mapping Committee. A completed document will address this.	Fall 2018 to Spring 2020	Assistant Superintendent Building Admin Liaison Teachers	Time
Warren	Review the math curriculum scope and sequence. Create a consistent K-2 approach in teaching fact fluency and determine materials that are needed.	Establish a Curriculum Mapping Committee. A completed document will	Fall 2018 to Spring 2020	Assistant Superintendent Building Admin	Time

		address this.		Liaison Teachers	
Warren	Provide a variety of differentiated materials to teachers and students. Identify appropriate interventions that are needed across the grades.	A Curriculum Mapping Committee will be established to accomplish this goal. A completed document will address this.	Fall 2018 to Spring 2020	Assistant Superintendent Building Admin Liaison Teachers	Time
Warren	Add additional languages for the "Letter Home to Parents".	Copies of letters in various languages	Fall 2018	Building Admin	Time
Warren	Increase technology in each classroom so teachers and students can access online tools. Provide teachers with professional development opportunities to utilize technology within the classroom.	Capital Plan	Spring 2019	Building Admin	Financial
Mindess	A recurring theme is that the language dependent nature of the program creates a challenge for students with learning disabilities and ELL students.	A Curriculum Mapping Committee will be established to accomplish this goal. A completed document will address this.	Fall 2018 to Spring 2020	Assistant Superintendent Building Admin Liaison Special Education ELL Teachers Guidance	Time
Mindess	Teachers feel that sixty minutes is not enough time to teach the EnVisions program to fidelity.	Meeting with Building Admin Formation of study team Document	Fall 2018	Building Admin Teachers	Time
Mindess	There appears to be some disparity in the way communication is handled among grade level teams and how communication is handled as a district.	Establish a team to address these issues and report out solutions as to how best to address these concerns. Grade level meetings with Admin.	Winter 2018	Assistant Superintendent Building Admin Liaison Special Education ELL Teachers Guidance Reading	Time
Mindess	Most grade levels report that there are concerns about students being able to access the information.	A Curriculum Mapping Committee will be established to accomplish this goal. A completed document will address this.	Fall 2018 to Spring 2020	Assistant Superintendent Building Admin Liaison Special Education ELL Teachers	Time

				Guidance Reading	
Mindess	The third grade teachers also recognize the need for reading comprehension skills in the area of math.	A Curriculum Mapping Committee will be established to accomplish this goal. A completed document will address this.	Fall 2018 to Spring 2020	Assistant Superintendent Building Admin Liaison Special Education ELL Teachers Guidance Reading	Time
Mindess	All grade levels also feel that there are not enough resources available to support all the needs of all learners.	Meeting with Building Admin Formation of study team	Winter 2018	Building Admin Teachers	Time
Mindess	Teachers wish that there were shorter assessments from which they could draw to pre-assess students.	Meeting with Building Admin Formation of study team	Winter 2018	Building Admin Teachers	Time
Mindess	Teachers would like more leeway with pacing. A primary concern of many teachers is the ability to meet the current calendar given the hour long block for math. Another concern is that some topics are not fully taught before MCAS is administered.	Meeting with Building Admin Formation of study team	Winter 2018	Building Admin Teachers	Time
Mindess	Training in a workshop model and guided math would serve to improve the effective use of these strategies as well.	Create and implement a2 year PD plan in conjunction with Warren School	Fall 2018	Assistant Superintendent Building Admin Liaison Teachers	Time Financial
Middle	With our Title 1 Program being new, we need time to help build the strongest program for Ashland Middle School. Continued work around how best to identify students (formally and informally), scheduling, access and programing will help support the growth of not only the program, but our struggling students.	Meeting with Admin to find common meeting time with Title 1 teacher and teams	Fall 2018	Building Admin Teachers	Time
Middle	Discussions have also been had about looking at data for our Concept classes in 7th and 8th grade. There are mixed views on the need/success of offering the class. Administration is pulling MCAS data to add to our discussion.	Meeting with Admin to look at staffing and a new schedule	18-19 school year	Building Admin Teachers	Time

Middle	Most recently, we have begun discussions around common visuals we hang in our classrooms and around the building on topics that cut across the grades to help saturate the students in the concepts.	Establish a team to address these issues and report out solutions as to how best to address these concerns.	Winter 2019	Teachers	Time Financial
High School	The ever-growing population of students with remedial needs is the department's greatest concern at this time.	Establish a team to address these issues and report out solutions as to how best to address these concerns.	Winter 2018	Assistant Superintendent Building Admin Liaison Special Education ELL Teachers Guidance	Time
High School	There are more students that would benefit from a "pre-concepts" class.	Meeting time with building admin to look at schedule options.	Winter 2018	Building Admin Liaison Teachers	Time
High School	The math department teachers would like to see more professional development in the areas of ELL/SEI and special education that can be used as PDPs toward recertification.	This has been offered to staff the last 2 years and will also be offered again next year.	Completed	Assistant Superintendent	Completed
High School	Teachers would like more collaborative time built into the schedule.	Meeting time with building admin to look at schedule options	Winter 2018	Building Admin Liaison Teachers	Time

Self Study Details

The following are each school's detailed results of the self study.

Warren School

Overview and Philosophy

As of February 15, 2018 the Warren School enrolled 618 pupils, including 7% ELL's and 16% on IEP's. 12% of first graders and 11% of second graders receive Title 1 math support. Teachers at the Warren School believe in a balanced mathematics program that meets the needs of all students, including our Special Education and ELL students, while addressing individual learning needs under the Common Core State Standards.

Based on the math study, Warren Staff would like to incorporate the enVisions program with the use of Guided Math practices. The use of Guided Math ensures leveled small group instruction to meet the needs of differing student populations. Currently, there is no math support for Kindergarten students. Additional support services are needed for struggling K-2 students.

Curriculum Overview/Alignment

At the Warren School the enVisions curriculum is taught with fidelity, specifically the topic opener, lesson video, and work mat. The program was designed to align with the Common Core State Standards by promoting three major themes: *focus*, *coherence*, and *rigor* in mathematics instruction.

Grade K has five major content clusters:

1. Know number names and the count sequence
2. Count to tell the number of objects
3. Compare numbers
4. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from
5. Work with numbers 11-19 to gain foundations for place value.

Grade 1 has eight major content clusters:

1. Represent and solve problems involving addition and subtraction
2. Understand and apply properties of operations and the relationship between addition and subtraction
3. Add and subtract within 20
4. Work with addition and subtraction equations
5. Extend the counting sequence
6. Understand the place value
7. Use place value understanding and properties of operations to add and subtract
8. Measure lengths indirectly and by iterating length units

Grade 2 has six major content clusters:

1. Represent and solve problems involving addition and subtraction
2. Add and subtract within 20
3. Understand place value
4. Use place value understanding and properties of operations to add and subtract
5. Measure and estimate lengths in standard units

6. Relate addition and subtraction to length

Assessment of Student Learning
Below is the current listing of assessments and timelines:

Henry E. Warren School
Math Assessment Schedule
2017-2018

Assessment	Kindergarten Assessment Date	Data Due Date (5 Days after assessment)	First Grade Assessment Date	Date Due Date (5 Days after assessment)	Second Grade Assessment Date	Data Due Date (5 Days after assessment)
Topic 1	Sept. 25	Oct. 1	Sept. 20	Sept. 28	Sept. 20	Sept. 28
Topic 2	Oct. 13	Oct. 17	Oct. 13	Oct. 17	Oct. 20	Oct. 27
Topic 3	Oct. 31	Nov. 7	Oct. 31	Nov. 7	Nov. 1	Nov. 8
Topic 4	Nov. 29	Dec. 6	Nov. 17	Nov. 28	Nov. 13	Nov. 20
Benchmark 1 (Topic 1-4)	Dec. 1	Dec. 8	Nov. 20	Nov. 29	Nov. 17	Nov. 28
Topic 5	Dec. 11	Dec. 18	Dec. 8	Dec. 15	Dec. 1	Dec. 8
Topic 6	Dec. 22	Jan. 5	Dec. 22	Jan. 5	Dec. 13	Dec. 20
Topic 7	Jan. 22	Jan. 29	Jan. 18	Jan. 25	completed	completed
Topic 8	Feb. 7	Feb. 14	Jan. 31	Feb. 7	Jan. 10	Jan. 17
Benchmark 2 (Topic 5-8)	Feb. 8	Feb. 15	Feb. 1	Feb. 8	Jan. 11	Jan. 19
Topic 9	March 2	March 9	Feb. 14	Feb. 28	Jan. 31	Feb. 7
Topic 10	March 12	March 19	March 6	March 13	Feb. 16	March 2
Topic 11	March 21	March 28	March 19	March 26	March 12	March 19
Topic 12	April 5	April 12	April 4	April 11	March 26	April 2
Benchmark 3 (Topic 9-12)	April 6	April 13	April 5	April 12	March 27	April 3

Topic 13	April 27	May 4	April 24	May 1	April 6	April 12
Topic 14	May 14	May 21	May 7	May 14	April 25	May 2
Topic 15	May 24	June 1	May 23	May 31	May 11	May 18
Topic 16	June 6	June 13	June 6	June 13	May 25	June 4
Benchmark 4 (Topic 13-16)	June 7	June 14	June 7	June 14	May 29	June 5

Based on enVisions Benchmark tests for first and second grade students there are currently (as of February 2018) 160 students scoring in the 80-100% range, 33 students scoring in the 70-79% range, and 27 students scoring in the 0-69% range. This data is skewed slightly because two teachers (one first and one second) have their students input Topic Tests into enVisions online component Pearson Realize. Due to difficulties with Pearson format we were unable to isolate just the benchmark tests from the additional topic tests. In September of 2017 first and second grade students took a math assessment as a "District Determined Measure" (DDM), but because of the number of assessments given and to keep consistency between buildings, we have since discontinued this practice.

Recommendations

Currently, there is an overwhelming number of assessments given to our young learners, as seen above. Staff members have reported seeing a benefit to reducing the number of assessments and utilizing the data collected from such assessments more effectively. To improve test scores of students falling within the 70-79% and 0-69% range, differentiated instruction based on data analysis of test results is recommended. Furthermore, the enVisions scope and sequence and the assessments at the Kindergarten level do not match up with the report card. It is recommended that Kindergarten align their enVisions instruction and assessment to the current report card. Finally, the team also needs to look at assessments types, protocols, how many assessments are given, and how the data is collected.

Data Analysis

The Math Team at the Warren School conducted the math survey during Common Planning Time (CPT) over the course of one week during this study.

Here is a breakdown of the data collected from the Math Survey Responses:
(*averages found based on the scale 1 being excellent, 5 being poor*)

Materials: Do you feel that enVisions has adequate resources (manipulatives, differentiation, etc…)?

Average: 2.6/5

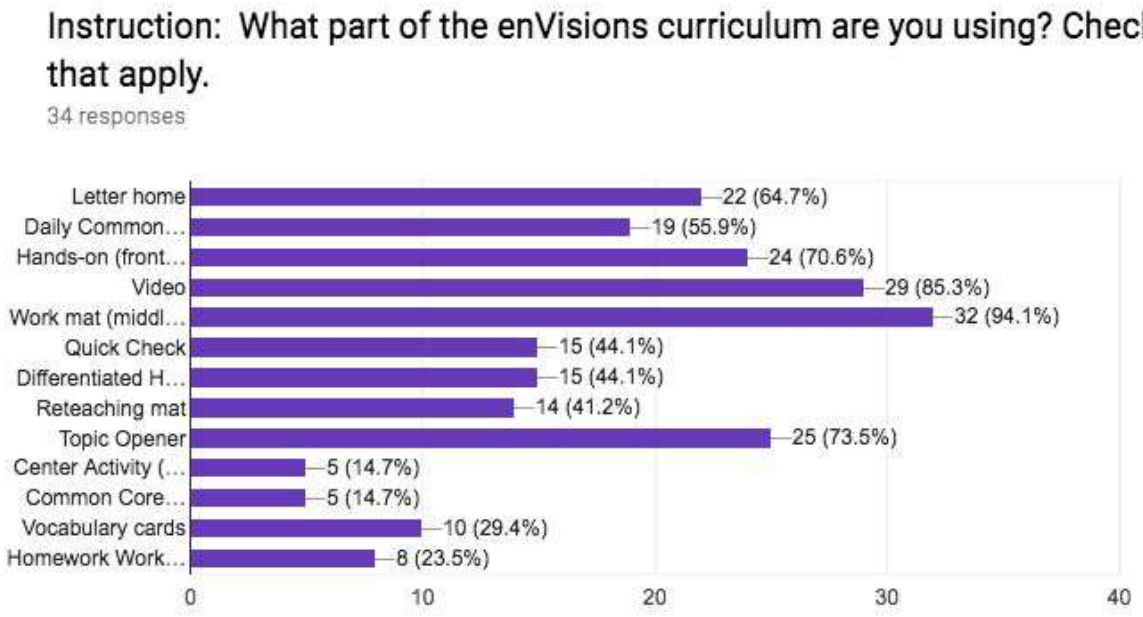
Additional Feedback: Key Points: fact fluency lacking, differentiation opportunities and materials are needed

Recommendations:

1. Consistent K-2 approach in teaching fact fluency and materials needed
2. Provide diverse differential materials to teachers and students

3. Add additional languages to the Letter Home to Parents

Instruction: What part of the enVisions curriculum are you using? Check all that apply.: *see graph*



Additional Feedback: Most teachers use the topic opener, lesson videos and work mats.
Recommendations: Use the program assessment tools and teacher observation in order to group students by skill level in order to plan differentiated tasks that address the lesson objective. Also, consistency in use of math homework, improved math centers, and consistent use of math vocabulary cards would benefit students' retainment of knowledge.

Interventions: How are students identified for intervention (in and out of the classroom)? What kinds of interventions are you using?

Additional Feedback: The Title One Math Teacher uses Pearson Online Benchmark Assessments to place students in the program using cut off scores for Grade 1 and Grade 2 students. It is reported that Kindergarten teachers are using a teacher developed Kindergarten Math Assessment based on the CCSS and enVisions test materials to determine student strengths and weaknesses. Grades 1 and 2 use Trimester Benchmark Assessments provided by the program for identification of Title One Services.

Teachers report using topic tests, alternate tests, anecdotal notes, and IEP math goals to group students of different needs or work with students 1:1.

Teacher also use the RTI process to identify struggling learners and create action plans in order for those students to potentially meet the benchmarks. Again, staff noted there is no Title 1 math support for Kindergarten students.

Recommendations: Continue providing support to staff in terms of materials and instruction. Consider the use of additional support for struggling learners K-2. Collaboration time between Title One personnel and classroom teachers is also recommended to ensure continuity of the instruction.

Diversity: Do you feel that our curriculum meets the needs of our diverse student population?

Average 2.9

Additional Feedback: Teachers are using a variety of methods to support students throughout the lessons and topics. However, teachers are either not aware of materials the program offers for differentiation or are using personal supplemental materials at times.

Recommendations: Provide more learning experiences for teachers on the tools already found in program that assist students with learning needs. Also, provide supplemental materials and instruction to teachers about differentiated learning specifically for ELL students and students with disabilities.

Data: How do you use data to inform your instruction?

Average 2.9

Additional Feedback: Some teachers are using their scores to help them determine math groups and additional supports for students, but not all.

Recommendations: Teachers need more training in how to use data from enVisions tests to differentiate student learning, along with other resources and instruction for doing so.

Online Tools: Do you use the online tools/assessments from enVisions?

Additional Feedback: Most teachers are using the paper and pencil versions of benchmark assessment and then inputting data online. For the topic tests, most teachers are taking the assessments using paper pencil, a few administer them online.

Recommendations: Consistent use of testing materials, including a test taking protocol for online tests for Grades 1 or 2 or both. Review of grade level tests administered and the content of the tests is again recommended.

Professional Development: What would you like to see more of in math professional development? (enVisions/Other)

Additional Feedback: Teachers would like to learn more about: teaching fact fluency, work stations, differentiation, pre/post-assessments, Number Talks Guided Math, enrichment activities, leveled standard based games, Diagnostic Tool Kit use, technology in the program, and have opportunities to share and discuss resources within different classrooms

Recommendations:

1. Provide staff opportunities to observe, share ideas, and to discuss educational practices.
2. Provide more enVisions training
3. Provide training in other trends for differentiation and number sense instruction.

Professional Development: Would you like to see more vertical math meetings K-2? K-5?

Additional Feedback: Staff reports needing more vertical K-2 meetings as opposed to K-5 meetings.

Recommendations: Promote staff vertical meetings K-2 to improve effective instruction as well as provide staff opportunities to observe, share ideas, and to discuss educational practices.

Fidelity: What is in place to ensure there is consistency among grade levels and vertically?

Additional Feedback: The staff reports consistent use of topic opener, work mats, and lesson videos, but other parts of the program are used less consistently K-2.
Recommendations: Continue the use of CPT and integrate Grade Level and K-2 math meetings into staff development.

Scope and Sequence: Is the current scope and sequence meeting student needs? Pacing?

Additional Feedback: Staff report the need to shift topics for various reasons.
Recommendations: Look at the rationale for the current scope and sequence of topics and evaluate whether any changes are necessary. The course of action determined would also need to be aligned with the existing new school report card.

Parent Communication: Besides the enVisions letter home, how do you communicate with families about math instruction?

Additional Feedback: Teachers are communicating to families in a variety of different ways. Parent letters and student progress is communicated differently across grade levels and inter-grade.
Recommendations: Provide *consistent* parent communication pertaining to the math curriculum in a manner that meets all student and family needs. Add all additional languages specific to the school populations to the Letter Home to Parents.

Technology

enVisions online component, Pearson Realize, has extensive resources for teachers and students who have access to the appropriate technology such as:

- Lesson videos
- Workmat (eText) for projecting
- Quick Check, Daily Common Core Review (eText) for projecting
- Online Math Tools resource
- Games Center
- Math Practice videos
- Printable vocabulary cards
- Online assessments (Topic Tests and Benchmark Tests)
- eText teacher manual, resources, standards
- Teacher access to classes, student data, and assign students online work

Teachers also supplement the math curriculum with Xtra Math, Front Row, and other Math Apps.
Recommendations: Some staff reported needing more technology in order to make use of the program resources. The team recognizes that with that there must also be training and/or professional development to ensure the technology is being used for its intended purpose. To support program needs, teachers and students will need individual portable computers within the classroom setting. (also see "Online Tools Survey" results)

Staffing Levels and Needs

At present, there is one Title One Math teacher serving approximately 50 students in Grades 1 and 2. Our Title 1 Math interventionist does not work with Kindergarten students, therefore identifying appropriate interventions at this level should be an area of further investigation. (see Overview and Philosophy). The program could benefit from additional portable computers (see Technology) and other instructional materials for differentiated teaching and learning. Our staff could benefit from additional training/professional development in interpreting data, and how to use it to inform their instruction. (see recommendations for Professional Development).

Professional Development

When enVisions was first brought to Warren, we had a professional development day to introduce the curriculum. The staff was given time to unpack and go through the math kits. We also had a follow-up staff PD with an enVisions representative to go over the technology pieces of the curriculum. On two other occasions the staff was trained/refreshed by grade level on the various parts of the enVisions kits. On another occasion, a representative from enVisions visited Warren School to demonstrate a math lesson to each grade. Furthermore, some staff members have been to trainings on guided math and are working on integrating it with the enVisions curriculum. During the 2016-17 school year, the district hired Mrs. Patricia Rourke, former Math Curriculum Coordinator, to assist classroom teachers with enVisions online technology. Also, Mrs. Rourke worked with the Math Liaison, Lori Freeman to pilot assessment practices for differentiated learning. She conducted a staff PD afternoon on differentiated instruction in math using enVisions assessments. Finally, Mrs. Rourke worked with Math Title One Teacher, Mrs. Taryn Marquez to navigate the online assessment components of the enVisions Program to access student reports/data by class and grade level.

Recommendations: Professional development in the following areas is recommended by the staff:

- How to differentiate activities for : ELL, SPED, advanced and below level students
- Fact fluency
- Number Talks
- Guided Math
- Hands-on activity ideas and game making
- How to use technology- just the basics and how to use more effectively
- How to develop and use math centers to differentiate
- Ideas for different available resources

Strengths:

- Staff is using Envisions across grade levels
- Math Curriculum Liaison
- Common Planning Time

Areas of Opportunity

Our staff has embraced the enVisions Program that was purchased to meet the Common Core State Standards. We will continue to unpack the program to use the materials to fullest potential, while supplementing the curriculum with opportunities for individualized instruction to meet the needs of our ever-changing learners.

Recommendations based on the Self-Study

1. Professional development to understand all of the components of the enVisions curriculum as many teachers are not using all of the resources available. In addition, teachers need more support in implementing guided math to a range of learners within the classroom (ELL, SPED, advanced and below level students), analyzing data, using supplemental materials for students with disabilities and ELL students, fact fluency and number talks.
2. Additional math supports are needed to continue supporting our most struggling learners across the grades. Collaboration time between Title One personnel and classroom teachers is also recommended to ensure continuity of the instruction.
3. Review of assessment tools, testing protocols, and data entry. Create processes for analyzing data within grade levels and vertically, this includes having cross-grade classroom visits.
4. Review the scope and sequence and understand the rationale and whether any changes are needed.
5. Create a consistent K-2 approach in teaching fact fluency and determine materials that are needed.
6. Provide a variety of differentiated materials to teachers and students. Identify appropriate interventions that are needed across the grades.
7. Add additional languages for the "Letter Home to Parents".
8. Increase technology in each classroom so teachers and students can access online tools. Provide teachers with professional development opportunities to utilize technology within the classroom.

Conclusion

The current enVisions Math Program is meeting the needs of the Common Core State Standards. However, additional staffing, professional development, materials, and teaching and learning experiences outside the program to create variations will yield the highest level of achievement for students and teachers alike.

Mindess

General Introduction

The Ashland Public Schools adopted the EnVisions Math Program, K - 5, in the fall of 2013. In the 2017-2018 school year, Ashland's 4th graders have used this program since kindergarten. There is at least some anecdotal evidence that this systemic approach to math instruction is having a positive impact on learning. An important piece is the building and use of common vocabulary in math instruction at all levels. At the same time, Mindess teachers express weaknesses in the program. A recurring theme is that the language dependent nature of the program creates a challenge for students with learning disabilities and for ELL students.

Currently, Mindess has 29 classroom teachers and one Title 1 math teacher. All 30 teachers responded to the math survey and most participated in the round table discussions. There are seven single graded classrooms at each grade level, and eight multi-grade classrooms in the Neighborhood program. Round table discussions were held by grade level or program.

This year a block for common planning time (CPT) and a Tiered Support Block (TSB) have been implemented on a weekly basis. CPT is often used to analyze assessment data and have conversations around math instruction. Often instructional groupings are created for the tiered support block.

Round Table Discussions

How do we know that the curriculum is being taught to fidelity?

Across the grades, the majority of teachers agree that it is difficult to know if the curriculum is being taught to fidelity. Teachers feel that sixty minutes is not enough time to teach the EnVisions program to fidelity. That being said, they feel that there are several ways to check to see if the program is being used reliably. These ways include; using benchmark, end of year, and topic tests to assess student progress. Additionally, teachers state that when students carry skills from grade level to grade level this is evidence of fidelity. Ongoing student use of programmatic vocabulary is also evidence of compliance. Teaching observations and consistent teacher communication is essential to success.

How do teachers and buildings communicate vertically to ensure continuity?

In order to ensure continuity, vertical communication between teachers and buildings is essential. There appears to be some disparity in the way communication is handled among grade level teams and the way communication is handled as a district.

In the multi-grade program, communication is continually horizontal and vertical through all grades, three to five. Teachers must communicate about all students and their math achievement from grade level to grade level in order to make informed decisions about student progress and placement. However, like other grade levels, the multi-grade teachers have no real idea about what is happening within other grade levels at Mindess or within other buildings. For example, the Middle School uses a different math program than Mindess. Upper level teachers wonder if increased supplementation is needed to fully prepare students for this next level or if there are skill sets that need to be “beefed” up.

Most grade levels report that when there are concerns about student abilities, it is common for teachers to reach out from class to class and/or grade to grade for feedback. Additionally, there are assumptions from level to level that sometimes negate the need for communication. There is also a perception that communication within and beyond Mindess is not something that happens very often.

What is in place to support horizontal cooperation and coordination?

The teams at Mindess feel that there are several supports in place for horizontal cooperation and coordination. One of the main arenas in which teachers are able to use both cooperation and coordination is in scheduled curriculum meetings. New this year is CPT. Because of this common planning time, teachers are able to collaborate more often. In addition to CPT, many teams meet to plan for TSB, RtI and other grade level or programmatic activities. Most teams also collaborate and coordinate activities through the use of shared Google docs which also contain common assessment scores and study guides.

Which Math skills are emphasized, reinforced, and practiced in other disciplines and/or subject areas at your school?

During our round table discussion, when asked which Math skills are emphasized, reinforced, and practiced in other disciplines and/or subject areas, all grade levels and programs felt that measurement and data are used specifically in the area of science, as well as graphing in both Science and Reading. All grade levels and programs also felt that there is some carry over to Social Studies. The Neighborhood felt that it is hard to do cross curricular activities due to the rigid schedule and the students being shared for math and literacy. Grades 3-4 also discussed the use of vocabulary across the content areas. Grade 5 specifically noted vocabulary done in the pull out setting. It was also noted by grade 3 and 4 teachers that writing to explain was something that was being used across the curriculum. The third grade teachers also recognize the need for reading comprehension skills in the area of math.

How can we evolve our Math curriculum and instruction to meet the needs of growing ELL population?

As part of the round table discussion, all the grade levels were asked how we can evolve the Math curriculum and instruction to meet the needs of our growing ELL population. It should be noted that many grade levels included the Special Education population as part of this question. All grade levels and programs also noted that there is limited support for students during the Math block. The hour allotted for math instruction doesn't always provide the amount of time needed to provide appropriate supports. All grade and program levels felt that there needed to be an emphasis on the vocabulary. The fifth grade teachers use vocabulary binders that allow students to preview vocabulary. They feel this is a benefit to these students. The language dependent nature of the program is something that all grade levels/programs noted as a difficulty. The severity of need can be affected by the complexity of EnVisions. Currently, teachers are working on creating less language dependent assessments in order to accommodate students in grade 3. In the meantime, grades 3 and 4 noted that they read assessments aloud to students who struggle. The 5th grade teachers feel that the homework and assessments are not differentiated enough, while all grade levels also feel that there are not enough resources available to support all the needs. The Neighborhood would like to include more authentic projects. Ultimately, there is a feeling of being driven by the calendar.

How is technology currently being used to accomplish Math goals in the classroom? (ie: program videos, fact fluency, etc.)

When asked about the current technology that is being used to accomplish the Math goals in the classroom, teachers at all grade and program levels noted using the program videos to aid in instruction. Teachers noted the accessibility to the program online as a positive aspect. Teachers noted that they use online homework and assessments, and enjoy the ability for students to access the resources at home. All grade and program levels discussed their use of online programs/games that have assisted in meeting math goals including Prodigy, Tenmarks, Khan Academy, IXL, IRead, Xtramath, Study Jams, Brainpop, Math Magician and Fact Monster to name a few. Fifth grade teachers also discussed their use of a composition notebook for modeling expectations and pre and post testing with topic tests. This is also done by several teachers in the Neighborhood.

How is formative assessment being used to improve instruction?

Formative assessments are used across grade levels to inform instruction. They are used to create small instructional groupings, determine unit pacing, develop instructional plans for the upcoming unit, determine readiness, provide additional practice, inform tiered support instruction, and determine reteaching needs.

Other comments: Teachers wish that there was more leeway with pacing and that there were shorter assessments from which they could draw to pre-assess students.

What assessment tools are being used for both pre and post assessments?

All grade levels use topic tests for pre and post assessments. Three out of four grade levels/programs use online assessments. All grades and programs use timed tests, teacher created assessments and quick checks. Third grade also uses common core reviews.

Other comments: Teachers sometimes find that the online assessments are too easy/basic. They wish the online assessments had a text to speech option. Some teachers also lamented that 60 minutes is not enough time for math instruction.

Please list any math concerns you have at your grade level.

A primary concern of many teachers is the ability to meet the current calendar given the hour long block for math. Many teachers are struggling to make a choice of whether to move on when students are not ready for the next topic, or not meet the requirements of the calendar. Another concern is that some topics are not fully taught before MCAS is administered.

There are some concerns about the rigor and wordiness of EnVisions. On the one hand, several teachers feel that the rigor of the program does not match the rigor and expectation of MCAS. On the other, many teachers feel that the wordiness of the program does not allow for IEP and ELL students to access the content easily. With the time allotted for math, one hour daily, many teachers are feeling that basic skill instruction including fact fluency is nearly impossible to fit in. During the round table discussion, many teachers expressed that they have had to give up going over homework due to time constraints. All who spoke about it feel that this is an essential part of instruction as it gives added practice and remediation time for students who need it.

A few teachers also expressed that some topics In EnVisions do not fully cover topics such as measurement and data. A larger number of teachers have expressed that the program is lacking in the area of problem solving and open response type questions. This is where the greatest need for supplementation of materials lies.

What in-class strategies do you use to support students who struggle?

Twenty-four of thirty respondents said that they use small group instruction to address struggling learners. Seventy percent of respondents said that they spend between 15 and 30 minutes of their math block in small group instruction. Sixty percent of respondents said that they would like to receive training in a workshop model of instruction and or guided math. A math workshop model supports the ability to teach in small groups, which in turn is required for guided instruction. The subsequent question becomes are we currently maximizing the effectiveness of instructional time? While many of our teachers have the framework in place for successful math instruction, they want/need training in the tools that maximize the impact of instruction. Teachers also said that they use manipulatives, visual aids, reteaching and vocabulary work to support struggling learners. Again, training in a workshop model and guided math would serve to improve the effective use of these strategies as well.

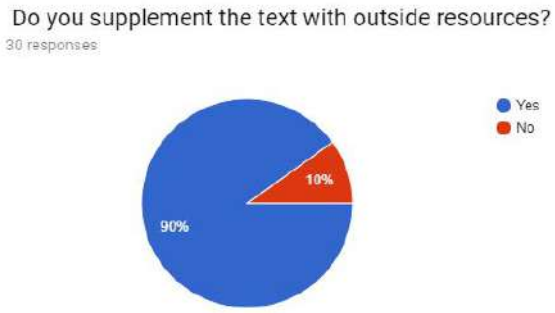
Other general comments

More time is needed to cover the material.
There is a lack of hands on projects.
There is not enough time for extra practice.
The pacing calendar lacks flexibility.
Teachers would like to have conversations around combining lessons.
Teachers do not feel that they can move forward if students are not mastering the material.
Teachers recognize that leveled classes might be of value.
Teachers appreciate the value of having a second adult in the room during math instruction.

Additional Comments

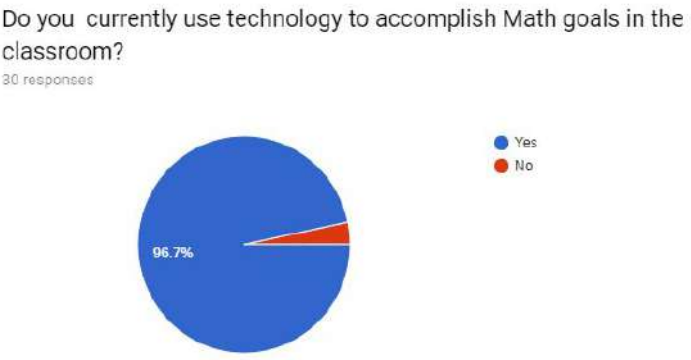
Additional comments that were made regarding Math curriculum included having more time to cover the material, especially for struggling students. Allowing more time would also allow some flexibility within the calendar to meet the needs of students in front of us. Teachers also would benefit from having additional supports during the math block in order to provide level groupings.

If you supplement, what are some of the supplemental resources you use?



90% of respondents supplement the EnVisions program.
These supplemental resources include: teacherspayteachers.com, superteachersworksheets.com, commoncoresheets.com, TenMarks, Khan Academy, Xtramath, Math Coach's Corner, Prodigy, math workshop resources, Carson Delosa Common Core Connections workbook, teacher made skills practice, guided math activities, previous math curriculum materials, previous MCAS open response questions, Singapore Math, and a variety of personal gathered resources found to be useful.

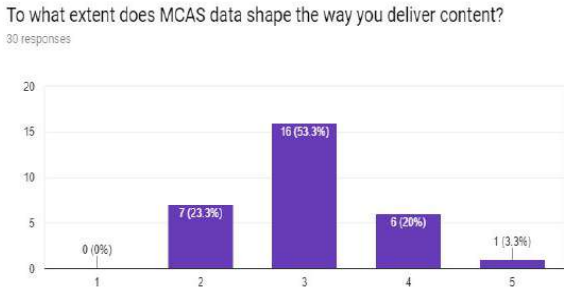
If yes, how do you use technology?
Almost all of the respondents to this survey say they use technology to accomplish math goals in their classrooms.



The following illustrates how technology is used within the classroom.

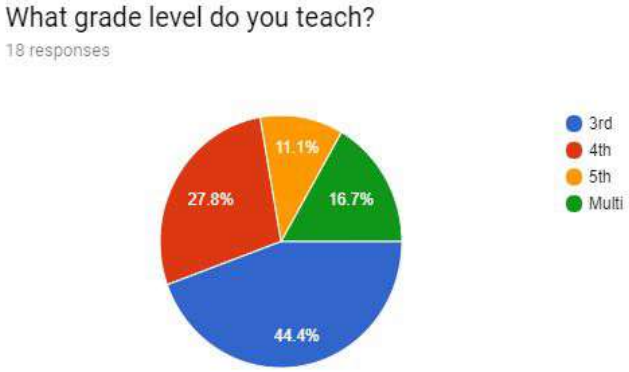
- The ELMO for projecting lessons, correcting homework, projecting the textbook, modeling skills, demonstrating skills using manipulatives, student led solutions, and reviewing tests.
- The computer and projector are used for viewing the videos that go along with the lessons, watching Khan Academy videos to reinforce lessons, for interactive lessons and to both assign and review homework.
- Chromebooks and such are used for online assessments, skills and fluency practice, centers which can include sites such as XtraMath, Khan Academy, TenMarks, IXL and Prodigy.

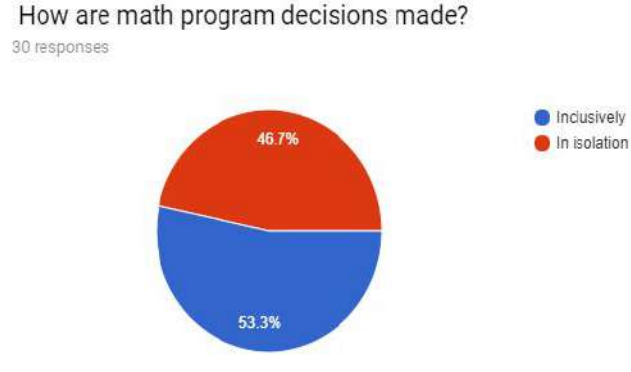
How does MCAS testing data affect the methods you use and skills you emphasize in the classroom?



Teachers generally report that MCAS testing does affect math instruction. Overall, they report using MCAS related information to impact instruction in two major ways. First, analysis of MCAS highlights math topics that are tested in breadth and depth. Teachers are responding by providing greater instructional emphasis in these areas. In turn, MCAS results have illuminated areas of potential weakness in instruction. Many teachers noted a need for practice in the area of writing to explain. Mindess has responded to this by developing a universal graphic organizer to be used when answering open response questions as well as through use of the MCAS rubric.

Other Survey Graphs
(The grade level question was added after the first 12 responses)



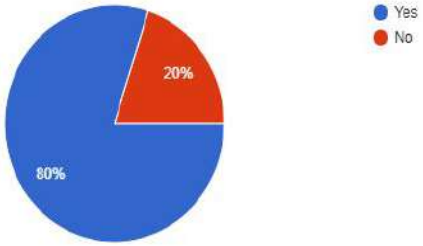


Are your current instructional resources aligned to the MA Frameworks/Common Core Standards?

30 responses

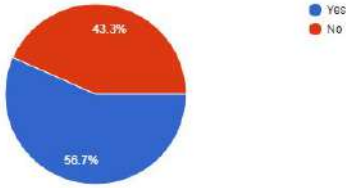
Do the instructional resources meet the needs of your student

30 responses



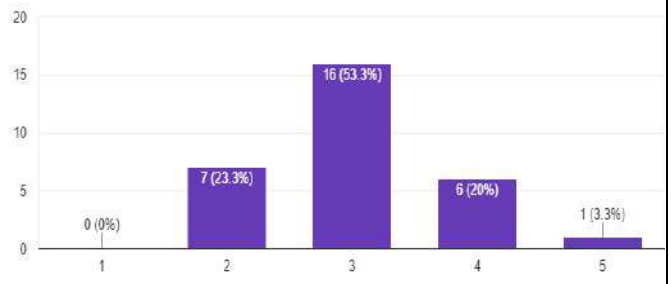
Does your grade level have a common rubric that is used for the scoring of all open response questions?

30 responses



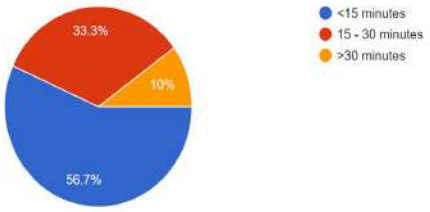
To what extent does MCAS data shape the way you deliver content?

30 responses



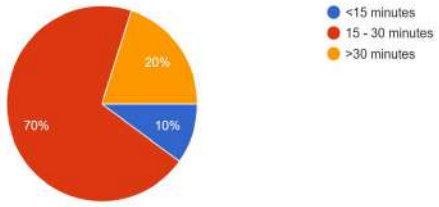
On average, what amount of your time is spent in individual instruction?

30 responses



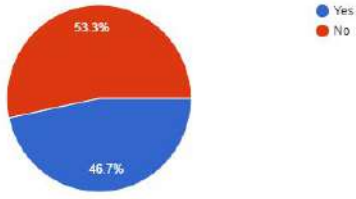
On average, what amount of your time is spent in small group instruction?

30 responses



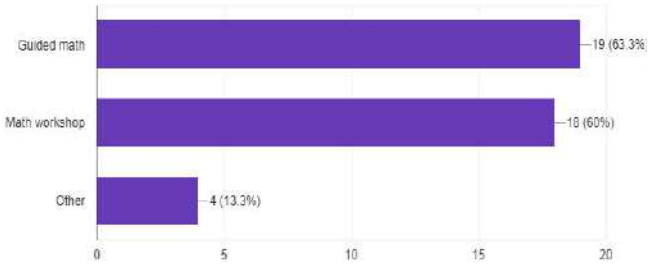
Do you use guided math or a math workshop model in your classroom?

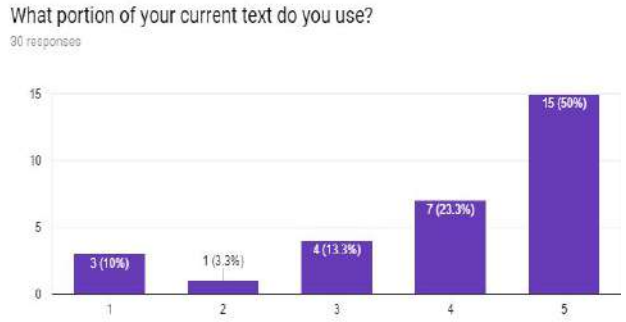
30 responses

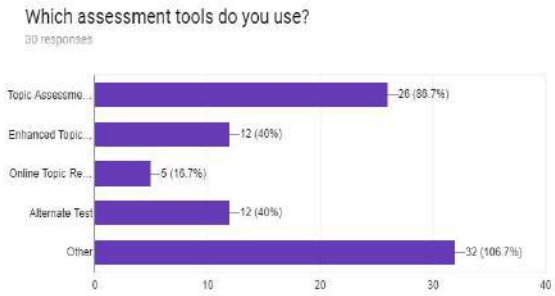


If not, would you like training in these areas?

30 responses







Strengths:

1. There is at least some anecdotal evidence that this systemic approach to math instruction is having a positive impact on learning.
2. This year a block for common planning time (CPT) and a Tiered Support Block (TSB) have been implemented on a weekly basis. CPT is often used to analyze assessment data and have conversations around math instruction. Often instructional groupings are created for the tiered support block.
3. Teachers noted the accessibility to the program online as a positive aspect.

Areas of Concern:

1. A recurring theme is that the language dependent nature of the program creates a challenge for students with learning disabilities and for whom English is not their first language.
2. Teachers feel that sixty minutes is not enough time to teach the EnVisions program to fidelity.
3. There appears to be some disparity in the way communication is handled among grade level teams and the way they view how communication is handled as a district.
4. Most grade levels report that when there are concerns about student abilities.
5. The third grade teachers also recognize the need for reading comprehension skills in the area of math.
6. All grade levels also feel that there are not enough resources available to support all the needs.
7. Teachers wish that there was more leeway with pacing and that there were shorter assessments from which they could draw to pre-assess students.

8. A primary concern of many teachers is the ability to meet the current calendar given the hour long block for math.Another concern is that some topics are not fully taught before MCAS is administered.
9. Training in a workshop model and guided math would serve to improve the effective use of these strategies as well.

Ashland Middle School

The Ashland Middle School Math Department consists of 6 Math Teachers and a Title 1 Math Teacher. Teachers are organized on Teams, with two teams per grade level. Each math teacher teaches 4 math classes per day and has one Discovery class per day. Each Team in 6th and 7th grade has a special education teacher that is with the math teacher 2 periods a day for inclusion classes. In 8th Grade, the two special education teachers provide subject specific supports. So, there is one special education teacher that works with both math teachers and is with each team two periods a day for inclusion classes. The Title 1 teacher meets with students from each grade, which provides some of our low-performing students with an additional math class each day. In grade 6, Title 1 classes meet every day (except one class that meets 3 times a cycle during Discovery). In grade 7, Title 1 classes meet twice a cycle. In grade 8, Title 1 classes meet 3 days a cycle. Class periods are 45 minutes long and range in size from 17-31 students.

Philosophy

Our mission is to prepare students for math in the real world through development of strong number sense, math reasoning skills, and problem solving strategies. We seek to develop math students that are capable and proficient. We hope to inspire students to love math and to help students develop mathematical reasoning and see this reasoning as a strength that will help them across all disciplines. By following sequential math standards, we are preparing them for real world academic and job related expectations. We provide a learning environment which fosters mathematical thinkers and one where students can successfully apply mathematical applications to become lifelong learners.

Curriculum Overview/Alignment

Currently, Ashland Middle School utilizes the 2014 edition of Big Ideas Math as its main curriculum resource for 6th, 7th and 8th Grade Math and Larson's Algebra 1 Common Core Edition for 8th Grade Algebra. The department agrees unanimously that these textbooks align to the Common Core and meets the needs of our students. However, other resources are commonly used across grade levels for both remediation and enrichment. These enhancements include Khan Academy, Teachers Pay Teachers, Engage NY, New Visions, and Mathcounts. The textbook and supplementary materials are used to develop notes, class work, homework, and assessments that align to the standards.

Assessment of Student Learning

As a department, we have spent much time developing common assessments. We have developed common end-of-unit assessments in each grade. Quarterly assessments and/ or Midterm tests are common in each grade. In 8th grade, every assessment (formal and informal) is common - warm-ups, homeworks, quizzes, tests and review packets. Teachers share and review criteria for grading assessments at each grade level.

In 6th Grade, individual plans are developed for math fact fluency and progress is assessed with drills and data is kept in a spreadsheet. 7th and 8th grade teachers continues with drills in various forms during Discovery and warm-ups throughout the year.

We have worked hard as a department to develop placement criteria for accelerated and concepts classes. Specific data is collected throughout the year on every student and organized in a spreadsheet, which is shared among the grade-level math teachers and the receiving math teachers. Categories in the spreadsheets include MCAS data, Common Assessment scores, Term Grades, and placement test scores. As a department we continue to analyze placement criteria and thresholds and make adjustments as necessary.

Data Analysis

At AMS, data analysis is a constant occurrence in the Math Department, both formally and informally. Daily check-in such as warm-ups, homework, and Tickets to Leave provide immediate feedback. The results of these activities are used to inform student understanding and guide teacher instruction. Cumulative assessments are wide ranging, including chapter quizzes and tests, quarterly check-ins, review packets, performance assessments and midterms. The results of these assessments help provide evidence of short and long term understanding of common core concepts.

MCAS data is also an essential component of math department analysis. While it does not necessarily drive instruction, it does provide information as to which students may require Tier I and Tier II interventions. These interventions include Discovery remediation, after school extra help , ISSPs, and Title I Math. It also provides a framework as to the types of questions students may need more exposure. Examples include questions where there is more than one possible correct answer or open response questions that require bigger picture critical thinking and an ability to show or explain the problem solving process. Currently, the AMS math department scores significantly above state MCAS averages across all three grade levels, with growth percentages above 50% for a majority of the students.

Technology

Math teachers rely on technology to enhance lessons and support differentiation. Interactive projectors, airserver, and overhead projectors are used heavily in lesson presentations. Chromebooks are vital for practice, remediation, and differentiation. Teachers across grade levels rely on access to chromebooks

for applications such as Kahoot, Quizlet Live, ShowMe, Math Trainer, and Khan Academy. Graphing Calculators are used with all Algebra students. 2Know Transponders are utilized as a response tool in some classrooms. Remind, Schoology, and web pages are use to enhance home-school connections. We would like to see technology expand in two ways. Having dedicated chromebooks, like ELA, would be very beneficial to our program. Being able to write grants for subscriptions and licenses to applications would enable us to use existing technology in innovative ways.

Staffing Levels and Needs

Currently, the AMS math department consists of two content teachers per grade level (one per team). These teachers work with a special education teacher in 1-2 classes in an inclusion model setting. In 6th and 7th grade, the special educator is a member of the team and works with the same population of students in ELA. In 8th grade, the special educator works with all students with math IEP goals, a cross-teaming method. AMS also has a Title I instructor who provides small group remediation two times per cycle (6 school days) to students that require math remediation as determined by the classroom teacher.

The biggest concern regarding staffing is class size. Currently, the 6th and 8th grade have class sizes as large as 31 students. This trend is expected to continue for several years to come. More problematic is the overcrowded inclusion classes. For example, the 6th grade inclusion classes for the 2017-18 school year are 26 and 30 students.

Another staffing concern is in relation to our growing ELL population. It is a challenge to transition ELL students into the content classroom, particularly when these children have little to no knowledge of the English language. While SEI strategies are implemented throughout the department, additional staffing would be beneficial if said staff member had a working knowledge of Portuguese or Spanish.

Professional Development

As a department, we would appreciate and Math Education/Math Content offerings for Professional Development the district could provide. We have been very active in searching outside opportunities. DESE offerings have been a great resource during the transitions from MCAS to PARCC to MCAS 2.0 and with the changes in the curriculum standards. Our involvement in DESE sponsored opportunities has been supported by the district, as they often occur during the school and require time out of the classroom.

Strengths

The greatest strength of the math department is the consistency in our policies. There is a common grade weight system implemented throughout all grades: Tests 40%, Quizzes 30%, Homework 25%, Classwork 5%. The department also developed a consistent policy for student improvement for quiz/test grades known as the buy back system. If a student receives a grade less than 80% on a test (all grades)

or quiz (6th and 7th grade only) he/she has the opportunity to "buy back" half of the lost points (up to 80%) by correcting mistakes to demonstrate improved understanding. The department has also developed a data driven criteria to determine math placement for each grade level. These criteria are consistent within the grade level and are catered to the data available to the teachers.

While the department has developed several formal policies, teachers are in constant communication with each other. This communication occurs during curriculum meetings, shared documents, e-mails, and daily informal conversations. These forums help enhance best practices, provide insights on students, inform instruction, and help plan and execute initiatives.

The trust and respect the math teachers have for each other have enabled us to develop a program that we are proud of and continue to work to build upon and improve.

Areas of Opportunity

The Math Department highlighted a few areas we could focus on.

With our Title 1 Program being new, we need time to help build the strongest program for Ashland Middle School. Continued work around how best to identify students (formally and informally), scheduling, access and programing will help support the growth of not only the program, but our struggling students.

Discussions have also been had about looking at data for our Concept classes in 7th and 8th grade. There are mixed views on the need/success of offering the class. Administration is pulling MCAS data to add to our discussion.

Most recently, we have begun discussions around common visuals we hang in our classrooms and around the building on topics that cut across the grades to help saturate the students in the concepts. For example, we have discussed a common visual for order of operations to be posted in all rooms. Students, also, struggle with the 6, 7 and 8 tables and we have discussed and gotten approval to use stickers and have the facts placed on the risers of the stairs that the students use every day.

High School

Introduction

This survey was given to the eight math department members, seven full-time and one part-time. All 8 teachers completed the survey. Each member of the department has taught low level and advanced courses as well as all grade levels, 9-12. The department believes the mission is to teach students to think critically and logically, thus preparing them for math encounters in their future, either in college or

the workplace. There was a general trend in responses that the department members feel successful in teaching the courses within the current standards, but that changes will need to be made as the population of students continues to grow and increase in diversity of learners.

Curriculum Overview

The department is unanimous in stating that all courses are aligned to the Common Core. Most of the courses taught have a textbook that is used as a reference and for practice, but all courses are supplemented with materials from other sources (teacher generated, online, and other text books). The department does not feel the need to change any texts at the current time. Most common courses have common pace and grading practices on assessments. Teachers do not have any common planning time at present but do feel it would be helpful in aligning common practices for common courses. Teachers are currently having these conversations during their lunches and before and/or after school on their own time. The department does meet monthly, but this time is typically used to discuss department and school wide issues and practices, curriculum mapping, and report generating, not leaving any time for common course discussions. The department meets to discuss changes in the yearly course offerings and is always looking to add and delete courses as necessary to meet the needs of the changing population of students.

About five years ago, the department spent quite a bit of time meeting with the Ashland Middle School teachers working to align curriculum and expectations. After these alignment meetings, the department feels as though Ashland Middle School sends the students adequately prepared for their courses, as well as does an excellent job placing the students in proper level courses at the high school.

Standardized Assessment

After many years of creating and revising the Concepts curriculum the department has ensured that these courses are aligned to the skills needed for the MCAS, and we focus on mastering the topics that are heavily included on the test. These topics are the same basic elements of algebra and geometry which are essential to any math education or career. The MCAS results are analyzed yearly and the Concepts II courses are supplemented with new material every year.

Our SAT and AP scores continue to be excellent on a yearly basis. Our AP scores in particular are some of the best in the school. Although our standardized test scores are great, every teacher in the department feels we've accomplished these standardized test results without simply "teaching to the test".

Data Analysis

The math department is constantly looking at formal and informal data to make curriculum and instruction decisions. A few examples of what some teachers do are midterm exams, warm-ups, review packs, and quizzes. After grading midterm exams, teachers do an item analysis to see what percentage

of students got each question wrong and what mistakes were made. These questions are shared with the students and explained to the class. Many teachers will give warm-ups questions to the students at the beginning of class, then collect them and quickly look them over. The results will inform the teacher as to whether they should circle back to previous material or move on to the next topic. Most teachers give weekly review packs on material that has already been taught but not mastered, as well as to keep material that has been mastered current when it will be built upon in the near future. One last example is when quizzes are given, teachers will grade them and look at the results. If the class average is less than 70% the quiz is often "thrown out", the material is re-taught in a different way, and a new quiz is given. We typically see 25% growth in student scores this way.

Technology

The department uses a variety of technology among the many different courses and levels taught. Teachers use websites, document cameras, projectors, graphing calculators and graphing software (Desmos/Winplot) on a daily basis. Geometry classes often use iPads and Dynamic Geometry software such as GeoGebra. The AP Statistics class uses Google Classroom. Many teachers have recently been using Quizlet and Google Forms for study tools and immediate informative feedback. The department feels satisfied with the current technology usage and is curious as to what emerging technologies will help further the mathematics understanding for the students.

Staffing Levels

In general, teachers feel successful with the resources the department has. In 2009 the department teaching force was reduced by 1.4 FTE, since then we have added back a .6 position. The department still feels the need to recuperate some of that .8 deficit to alleviate class size, particularly at the CP1 level.

However, over the past few years there has been an influx of students coming to the High School from schools other than Ashland Middle School. Our current resources and programs are designed for students who have been in the Ashland School system for a few years. We are finding with this influx of students new to Ashland, we are not equipped to meet their educational needs without increasing support staff levels. There are more students on educational plans, and the support staff assisting them outside of class needs to have adequate high school math knowledge.

Along these lines, the number of students enrolling in CP1 courses is increasing. These courses need a math teacher, as well as a special ed teacher or aide to adequately meet the needs of all these students. We currently don't have the special ed/support staff to fill this need in all courses.

Finally, with the influx of students from other schools, we feel the need to offer a "pre-concepts I" course. There are many students coming with weak math foundation skills and are struggling in the lowest courses we offer. We need a new course to offer them. AHS does currently offer General Math,

but only students on IEPs are allowed to take it. We need to expand upon the concept of this course to any student who would benefit from it, regardless of if they are on an IEP. This would require an additional .2 or .4 math teacher.

Professional Development

The math department feels as though the recent professional development offerings have not been beneficial to them as educators. They would like professional development time to meet within the department to continue to align courses and create common assessments, and work vertically with other schools. The department would also like to see professional development workshops offered for Special Education and ELL to earn PDPs to then apply towards re-certification.