

SOUTH ORANGETOWN CENTRAL SCHOOL DISTRICT

Curriculum Review Report Outline

District Mission Statement:

In a rapidly changing world, the South Orangetown school community affirms its positive vision of the future by providing a safe and a caring environment where the excitement of teaching and learning is shared by all, and where we encourage and nurture the uniqueness of each child.

Through diverse and challenging programs, we promote high academic standards, creative and critical thinking, self-respect and respect for others, and acceptance of our responsibilities in a global society.

We are committed to fostering a love of learning in our students.

Our Vision of Mathematics Education:

According to many education, business leaders, and policy makers, sound mathematics education is key to a student's career success and global competitiveness.

The South Orangetown Central School District fosters mathematical excellence in all students by creating learning environments based on research on how students learn. The District's math program will be anchored in best practices in mathematical content and pedagogy. Our mathematics program will create a generation of mathematical thinkers.

We believe that an understanding of mathematics concepts and their application is an essential skill for all students. We have the following vision for our SOCSD Mathematics program:

1. Our mathematics program engages students in a variety of learning experiences designed to develop mathematical discovery and reasoning.

2. We hold high expectations for all students to learn mathematics. We provide strong support for every student. We challenge each student to learn at their highest possible level. Student success means having all students think mathematically to their highest potential. We continue to encourage students to explore challenging curriculum options and assessments.
3. Our mathematics curriculum is coherent, aligned with current research, well articulated and shared across all grades.
4. Our math classrooms are intellectual environments where active engagement is the norm and where students build new knowledge from prior knowledge and experience. Students are able to apply math skills and concepts to other content areas and outside the classroom.
5. Students are encouraged to maintain enrollment in challenging math courses through graduation from high school.
6. All students are assessed yearly using multiple forms of authentic formative and summative assessments.
7. We hold high expectations for our teachers and students. Teachers have opportunities to work together to articulate and share their expertise to develop and deliver high-level mathematics education at every level. We support continued articulation and staff development to achieve the goals.
8. All teachers have access to effective curriculum materials, appropriate instructional tools, and research on mathematics teaching and learning. We support our teachers as they grow and deepen their knowledge base in mathematics education. .
9. The needs of all learners are met through differentiation in classrooms using flexible grouping and on-going formative assessment including pre assessment. Students who have mastered concepts need to be challenged with differentiated material.
10. Students and teachers have access to appropriate technology that enhances instruction and increases student achievement.
11. All adults who touch the lives of our students are supported to learn about state of the art math learning and teaching practices. We foster a positive math climate and attitudes for all students, teachers and parents.
12. K-12 math coordination is necessary and essential to achieve our goals.

Background of our work 06-07

During the 2006 – 2007 school year, a team of teachers and administrators K-12 were trained on how to use the data warehousing offered by Southern Westchester BOCES. This was the first meeting of the District's Math Leadership Team.

During our Superintendent's Conference Day in March 2007 two math teams with representative teachers K-12 met to discuss the District's math program using essential questions drawn from our data. This information was brought back to the teachers to review.

Summary of Information from K-12 Articulation Meeting, March, 2007:

1. More remediation is needed for students who haven't mastered basic math.
2. Common vocabulary is needed at each grade level.
3. Common vocabulary throughout the grades should be a priority.
4. Curriculum maps should include level of difficulty each grade should attain (introduce, develop, master, benchmarks with examples).
5. Develop a District-wide Math Committee to research and share proven strategies.
6. Create a motivational math climate. Develop an army of math lovers and problem solvers.
7. Remediate when students haven't mastered grade-level basic skills (develop spiraled intervention program).
8. Enhance use of technology for Math instruction.
9. More extensive problem solving needs to be incorporated throughout units.
10. Develop a concise, critical, in-depth PreK-12 curriculum.
11. Continue the PreK-12 discussion.
12. Math support for new teachers or teachers new to teaching math in the building should be considered
13. Solid differentiation practices for all math classes must be put into place.

During the conference day held in November 2007 all math teachers reviewed their current math curriculum maps and maps from the grade immediately above and below their current grade. Here is a summary of the comments from that work:

Information for Math Curriculum Audit K-12 – November 2007:

Elementary Comments:

- Fact quizzes go for 10 – 50 questions in grade 2 to 100 questions in grade 3.
- Smart board lessons need to be added to maps.
- ELA read-aloud should be integrated into Math content where appropriate.
- Science connection should be added to maps.
- Algebra isn't taught in grade 3.

- Question: What do you do to promote memorization of facts for students who don't have them?
 - No evidence of pre-test on grade 3 or grade 5 maps.
 - No evidence of fact quizzes on grade 3 and grade 5 maps.

- Suggestions:
 - Math remedial support is needed.
 - Consider a math staff developer like Lit life.
 - Consider a District-wide Math coordinator.
 - Need a math facts program.
 - What do we do for children leaving grade 3 without their facts memorized?
 - Need to add Introduce, Develop, Master, Challenge to the concepts and skills in each map.

Middle School Comments:

- More math time is needed to incorporate technology.
- More Success maker licenses.
- Add spiral review to maps.
- Home connection has to be made to reinforce computational skills
- Add: Introduce, Develop, Master, and Challenge to maps.

- Questions raised:
 - How can we modify performance tasks to make them more meaningful?
 - How do we sustain the students' interest?
 - How can we strengthen basic skills?

During the 2007 – 2008 school year, the District Math Leadership Team met 3 times. Their focus was on reviewing District-wide data, curriculum and program options. The Team also worked on surveys for parents, students and teachers. The Team was introduced to Performance Pathways and had a follow-up training on the Curriculum Mapping portion of this software. The SOMS math teachers and all administrators were trained on the Performance Tracker and Assessment Builder software. SOMS teachers learned how to scan tests into the software. The District-wide Math Leadership Team was also trained by the Tri-State staff. They turn keyed this training in all buildings in preparation for the spring 2009 Math Tri-State visit.

TEAM'S FINDINGS

Curriculum and Instruction

Curriculum Findings:

A review of maps (2007 – 2008) by all teachers revealed:

- a. A consistent approach to mapping was needed.
- b. Maps should be shared so all teachers could see what is being taught at each level.
- c. Math vocabulary wasn't evident on all maps.
- d. Aligning curriculum standards to assessment data is not easily accomplished with paper maps.

Curriculum Goals: 2007 – 2008

- Based on the items listed above, it was determined that by the end of this year (2007 – 2008) all math maps will be entered into Performance Pathways.
- Vocabulary will be put in the “other” category. We need to explore how we are teaching mathematical language connected to strategies that may have been used. We should add what we are currently using on maps and the mathematical term connected to the hints and tricks. Involve the students in this process: such as: creating math glossaries connecting mathematical language to strategies.
- Each building has teachers entering the CORE maps.
- The CORE maps will be reviewed by all math teachers before the end of the 2007 – 2008 school year and then reintroduced in September. Each building will develop a plan with their administrator to assure that this review occurs.

Curriculum Goals: 2008 – 2009

- Principals/APs will review data from 2007 – 2008 testing. There will be some agreed upon approaches to the data review that will be applied district wide, as well as building specific approaches. Building administrators will be responsible for providing this analysis to the teachers and sharing this with the Assistant Superintendent and Superintendent in September and throughout the year.
- Building administrators will use the report feature in Performance Pathways to study the curriculum that relates to the math results. These building level reports will be shared with the Assistant Superintendent and Superintendent in September and throughout the year.
- CORE maps will all be entered. The next step is to look at differentiated lessons and assessments. This information should be added to the maps and explored by teaching teams. Best practices and materials should be shared and catalogued in the software. Teachers who are new to the district or new to the subject should be mentored by an experienced teacher.
- The skills and concepts on the maps need to be assigned a code: I=Introduce, D=Develop, R=Reinforce, C=Challenge

- Teachers will learn how to use the search feature of the software.
- Administrators will look at the alignment between the standards on the maps, the lessons and the student data.
- Enhance math curriculum through staff development in the areas of: performance tracker, performance pathways, differentiated instruction, data information and assessment driven instruction

Instructional Materials

Each building has developed their curriculum maps using the New York State Standards. There are several main resources that are used by the teachers including: Houghton Mifflin, Creative Publications, Glencoe, Math Their Way, Touch Math, teacher made materials and materials created collaboratively.

Technology is very effective in math instruction. Hardware and software programs need to be updated. Smart boards are being used effectively in some math classrooms. Computer software is being used where possible. There is a pilot program at TZE using handheld devices (SENTEO) to enhance math instruction.

Instructional Material Goals: 2007 – 2008

- Secondary teachers will review textbooks for potential adoption for the new Regents courses. Integrated Algebra, Integrated Geometry, Algebra II/Integrated Trig. (Teachers may be asked to work with materials next year before an adoption takes place)
- Increase the number of Smart boards
- Review data in the “Touch Math” pilot at TZE.
- Use Senteos and Performance tracker for data and on-going assessment purposes
- Identify at the building level the materials available for teachers

Instructional Material Goals: 2008 – 2009

- Turnkey training on “Touch Math” at WOS and CL by TZE staff for students who need remediation (share at a faculty meeting)
- Expand Senteo handheld project to each building.
- Continue to expand the number of Smartboards until every teacher who teaches math has a Smart board.
- Review the data on the Success maker software.
- Review other technology support, advances, and software.
- Continue to review textbooks for the new High school courses
- Analyze any resource needs at the building level

Instructional Time

A review of our current program revealed:

Grades K-1 45 minutes of math instruction daily

Small groups in classroom, support provided by teachers and teaching assistants. Office hours provided by teachers. No additional pull out or push in support is available.

Grades 2 – 3 40-60 minutes of math instruction per day.

Math Learning Institutes for 3rd graders before the State assessment. Small group support in classroom provided by teacher and teaching assistant where applicable. No additional pull out or push in support is available.

Grades 4 – 5 40 – 50 minutes of math instruction per day.

Math Learning Institutes for 5th graders in the Spring after the assessment. Math Olympiads for advanced students. No additional pull out or push in support is available.

Grades 6, 7, 8 42 minutes of math instruction per day.

One intensive math section per grade for special education students. Advanced math at each grade (Accelerated plus Honors grades 7 and 8) Math Olympiad Club. Math Enhancement: 2 – 6 days a week during Period 8.

Grades 9 – 12 41 minutes of math instruction per day.

There are math labs that are either 2 or 3 days per cycle. Each learning center is attached to a math class and is an additional 41 minutes of instruction. Math skills class offered for additional support. Honors, Accelerated and AP classes at all levels. Multi-year courses are available for special education students.

Instructional Time Goals: 2007 – 2008

- Propose a math intervention program for elementary schools. Staff with 1.5 teachers and 1.5 teaching assistants.
- Develop a spiraled intervention skill and concept based program with entrance and exit criteria for all elementary schools
- Develop a new math course for 9th graders who have failed 8th grade math

Instructional Time Goals: 2008 – 2009

- Review data related to new intervention program Make adjustments where needed.
- Review data on new 9th grade course.
- Look at criteria for student placement on grade 6 math as well as criteria for continuing in accelerated classes 6-8
- Look at potential lab period for some sections of grade 6 classes. (SOMS will address this as a building level goal)

- Consider summer interventions for students not meeting grade level criteria (Grade 1)
- Develop a new math course for 10th graders who successfully completed algebra but need additional time to prepare for geometry. (TZHS will address this as a building level goal)
- Ask each building to look at their schedule and time to determine if any adjustments are possible.

Assessment and Data

There is so much data produced by State exams it is a challenge to make sense of the information. How do you know what data is significant? How can you use data to inform instruction? What approach should we use when studying data?

We determined that it was important to develop a consistent District-wide approach to the analysis of State data. It is essential that there be a building level administrator assigned to the Data Analysis Plan and work in the building. The plans will be supported and shared with the Assistant Superintendent and Superintendent in September and across the year.

Data Analysis Plan:

Every year each building will be responsible for the following:

1. Review the progress of the same group of students from year to year.
 - a. Look at proficiency rates.
 - b. Look at the percentage of Level 4 students.
 - c. Look for upward movement within the levels, in particular high 2's to level 3 and high 3's to level 4: Develop an instructional plan
 - d. Look at specific students who are not making progress and review their past and current interventions. Develop a plan for these students each year.
 - e. Identify the highest learners and provide challenging and appropriate curriculum options that go beyond the grade level expectations.
2. Compare the progress of the same group of students across different exams such as (ELA 3 – 8 and Math) and compare their standardized results and their grades in classes.
3. Review the building success rate for each strand compared to the region. Identify areas of strength and need. Share this and all information with staff. Work with the teachers to develop instructional plans based on this data.
4. Provide teachers with their class information with the designations of high, medium and low connected to their levels. Work with the teachers on reviewing the types of questions that had the greatest impact on these scores. Use team meeting time,

- department meeting time, and staff meeting time and conference day time. Have the teachers determine how they might address the areas identified in classroom instruction. Share this work with the team and share the results with the students. Set specific goals based on this information. Students scoring at the highest levels need to be identified and challenged in the classroom.
5. Administer a practice test each year or a common assessment that measures cumulative information. Analyze results with students. Compare the results on the practice test with actual test results. (using Senteo or Performance Pathways) The administrator should meet with individual teachers to review their results and their instructional plans. Building level results will be shared with the Assistant Superintendent and Superintendent.
 6. Compare results on classroom assessments, class grades, and State test results.
 7. When an area of need is identified as in need of improvement (based on multiple data sources), curriculum should be reviewed for alignment. Look also at the alignment between questions on classroom assessments and State assessments.
 8. From a District-wide and building-wide perspective, look yearly at subgroups: gender, special education, ELL and AIS. Buildings will enter intervention data from AIS,GT, RTI, Special Education, ELL into Performance Pathways. Building administrators will use this data to measure effectiveness of interventions.
 9. Special education students continue to have difficulty reaching proficiency in State tests. Graduation rate and other high school data confirms that special education students are graduating, but as the State safety net is changing and the test requirements increase, the District will have to monitor these students very closely and identify interventions that are the most successful Each building will be asked to look at their special education and regular education students who do not reach proficiency and compare their results with their interventions.
 10. The High School math department will review and analyze the Regents data each year.
 11. Post graduation data will be analyzed each year. We will also survey the seniors prior to graduation each year and track the results of their surveys. The High School seniors who are in the Statistics class will review this data each year.

Data will be shared yearly at the Administrative Cabinet level to help inform progress and program choices district wide.

Data Goals: 2007 – 2008

- Progress from grade to grade (same group of students) was prepared by ASI and shared with team. Patterns were identified (Data attachment A).
- At SOMS the ASI prepared a report for each teacher indicating the bands of students at high 2 and high 3. Common questions were analyzed and shared with students. The 2007 data indicates that a significant number of students moved up a level (20+ at each level 2 – 3 and 3 – 4 at grades 6, 7, 8).
- Building Benchmark Reports were studied. At grade 3 we are looking for an 85% success rate per question. Some items under Geometry and Statistics were identified as need areas. The curriculum timeline was adjusted based on this information.
- Applying the 85% success rate to grade 4 identified some areas within all strands to be reviewed. Spiral reviews and homework packets were developed based on these areas.
- As we move toward grade 5, we applied an 80% success rate in the hope that we would eventually move to the 85% success rate. Some areas were below the regional success rate. Teachers looked at these items and developed spiral reviews.
- Grade 6, 7, 8. The State and the regional results put the success rate closer to 65% - 75% for most questions. We would set our success rate to 75% to begin with the hope of them moving to 80%. Questions were reviewed. Spiral reviews and do-nows were developed to address needs. Questions missed by the high 2's and high 3's were also incorporated into this work.
- Practice tests were administered at TZE and SOMS. These results will be compared to actual results March 2008 test. We scored the tests internally to get preliminary information while we wait for the official results
- Each principal will be monitoring the progress of students who have participated in Math Learning Institutes.
- Gender data: At each grade level, the girls outperformed boys. Staff development on ways to effectively reach boys has taken place at TZE and at our Superintendent Conference Day.

Data Goals: 2008 – 2009

- Apply our data analysis plan and look for growth.
- Identify the bands of high level 2's and high level 3's at each grade 3 – 8. Use this information to revise, update, and spiral reviews, do-nows and home packets.
- Compare impact of different interventions: AIS math remedial teacher, Math Institutes, Success maker math. (Grade 6/ CL plan?)ELL at TZHS
- See if the gender data is impacted by exposure to technology (i.e., Smartboards).
- Look at correlation between grade 8 performance and high school grades (with the advent of the new State exams, it makes sense to start with this as baseline data this year. First administration of Integrated Algebra Regents will be June 2008. First administration of the Integrated Geometry Regents will be June 2009).
- Look at higher level math classes and percentage of girls and boys in these classes.
- Consider adopting grade level benchmark outcomes for math skills and understandings
- Each building needs to review the district data plan and develop their building level plan with their staff.

**2006 – 2007 PROFICIENCY DATA BY GENDER AND SPECIAL EDUCATION
Total boys and girls**

Grade	Boys Total proficiency: reg ed and spec ed)	Girls (Total proficiency: reg ed and spec ed)
3	93.9%	96.3%
4	72.88%	86.49%
5	88.36%	89.31%
6	86.51%	90.14%
7	73.86%	92.2%
8	72.88%	86.49%

2006-2007 PROFICIENCY DATA BY SPECIAL EDUCATION AND REG EDUCATION

	Reg Ed Prof. Total	Reg Ed students Prof. %	Reg Ed students NOT Proficient %	Special Ed Proficiency %	Number of Special Ed Proficient	Spec Ed Not Prof %	Number of Special Ed NOT Proficient
3	243	96%	4%	80.56%	29	20%	7
4	241	99.5%	.5%	26.09%	6	74%	17
5	248	93%	7%	59.46%	22	40%	15
6	236	90%	10%	55.26%	21	45%	17
7	262	89%	11%	39.02%	16	61%	25
8	222	84%	16%	26.09%	6	74%	17

**Future goal: Look at each of the students who do not reach proficiency and review their interventions. Compare their classroom progress to these results and the results from this year's exam.

MATH PROGRESS FOR 2005 – 2006 TO 2006 – 2007

Grade 3 Math 05 – 06		
	#	%
Level 4	111	41%
Level 3	148	55%
Level 2	10	4%
Level 1		
Total	269	
Total Proficiency		96%

Remarks: No significant change

Grade 4 Math 06 – 07		
	#	%
Level 4	116	44%
Level 3	130	49%
Level 2	11	4%
Level 1	7	3%
Total	264	
Total Proficiency		93%

Grade 4 Math 05 – 06		
	#	%
Level 4	126	44%
Level 3	138	49%
Level 2	16	6%
Level 1	4	1%
Total	284	
Total Proficiency		93%

Remarks: Movement downward, particularly between levels 4 and 3.

Grade 5 Math 06 – 07		
	#	%
Level 4	69	24%
Level 3	183	64%
Level 2	27	9%
Level 1	6	2%
Total	285	
Total Proficient		88%

Grade 5 Math 05 – 06		
	#	%
Level 4	55	20%
Level 3	162	60%
Level 2	40	15%
Level 1	13	5%
Total	270	
Total Proficiency		80%

Remarks: Significant move upward from 3 to 4

Grade 6 Math 06 – 07		
	#	%
Level 4	96	35%
Level 3	138	50%
Level 2	32	12%
Level 1	8	3%
Total	274	
Total Proficiency		85%

Grade 6 Math 05 – 06		
	#	%
Level 4	50	17%
Level 3	166	56%
Level 2	66	22%
Level 1	16	5%
Total	298	
Total Proficiency		83%

Remarks: Same passing rate; continued move upward from level 3 to 4

Grade 7 Math 06 – 07		
	#	%
Level 4	93	31%
Level 3	157	52%
Level 2	42	14%
Level 1	11	4%
Total	303	
Total Proficiency		83%

Grade 7 Math 05 – 06		
	#	%
Level 4	55	23%
Level 3	126	52%
Level 2	51	21%
Level 1	11	5%
Total	243	
Total Proficiency		75%

Remarks: Similar results from year to year

Grade 8 Math 06-07		
	#	%
Level 4	60	24%
Level 3	133	54%
Level 2	43	18%
Level 1	9	4%
Total	245	
Total Proficiency		78%

**Building Success Rate
Math Analysis 2006 – 2007**

NUMBER SENSE AND OPERATION	3	4	5	6	7	8
Building Success Rate	85%	85%	73%	74%	71%	72%
Regional Success Rate	84%	82%	73%	70%	69%	69%

Remarks: Our success rate was higher than region at each grade level

ALGEBRA	3	4	5	6	7	8
Building Success Rate	72%	82%	82%	77%	61%	72%
Regional Success Rate	73%	79%	85%	73%	58%	67%

Remarks: Algebra success needs improvement at several grade levels. Our students performed lower than the regional success rate (grades 3 & 5).

GEOMETRY	3	4	5	6	7	8
Building Success Rate	86%	80%	72%	65%	77%	76%
Regional Success Rate	87%	78%	71%	60%	74%	72%

Remarks: Look at questions and curriculum for alignment

MEASUREMENT	3	4	5	6	7	8
Building Success Rate	91%	76%	85%	83%	82%	71%
Regional Success Rate	90%	71%	83%	80%	79%	68%

Remarks: Consistently above region.

STATISTICS/PROBABILITY	3	4	5	6	7	8
Building Success Rate	83%	86%	78%	79%	77%	
Regional Success Rate	82%	82%	76%	76%	74%	

Remarks: Consistently above region

STAFF DEVELOPMENT

During our discussions at several levels, the importance of ongoing staff development was discussed. Different models should be explored such as: workshops, conferences, in-house training, consultants coming into the District (like the Litlife model), math coordinator, etc.

Staff Development Goals: 2007 – 2008

1. Support teachers attending workshops by Kathleen Feller and Eleanore Levisay
2. Smartboard training to be continued. Several additional Smartboards will be installed in Math teachers' classrooms.
3. Training of grade 2 & 3 teachers on use of Senteo's that they can borrow to use in classrooms.
4. Training on assessment builder in Performance Pathways and curriculum mapping for all teachers and administrators.

Staff Development Goals: 2008 – 2009

1. Participate in Integrated Algebra/Trig curriculum development project at PNWBOCES.
2. Consider developing an in-house staff development plan: Each building will look at their needs and we will come up with a district wide approach and plan for future years.
3. Enhance lesson and assessment portion of Tech Paths.
4. Continue our Performance Pathways training focusing on the Performance Tracker and Assessment builder options.
5. Expand our Senteo training to each building.

Home/School Communication

It is clear that if mathematics achievement is going to improve, the home and the school need to work together. We received a small number of responses from our surveys. (Total of 114 parents: WOS: 11, TZE: 26, CL: 25, SOMS: 33 and TZHS: 19) Parents expressed the desire to have more communication on the math programs in our schools. Principals have hosted Coffee Chats on this subject with very low attendance. Other school wide events have also had low attendance. How can we get the information out to more parents? It was suggested that this topic and question be raised at BLT and PTA meetings. One way might be to have a short segment related to curriculum at each meeting. The information about this could be sent out via email and using the K-12 alerts. Parents might come to a meeting at a designated time for a short discussion on a topic of interest. We also discussed exploring ways that we could use technology such as pod casts, wikis and the website to share on going information. Teachers expressed concern that some faculty members have stopped using websites because of the small number of people who were actually using them. This is a topic that has to be explored with the different stakeholders to come up with creative solutions.

Creating a more positive math culture was also explored as a goal of this committee. Looking for ways to create fun events that focus on math such as: scavenger hunts, contests that everyone can participate in, riddle of the day, problem of the day, etc. Also celebrations of math achievement should be incorporated district wide. The team would also like to explore the concept of a Math Week district wide where activities like Mu Fest would take place in all the

buildings. The focus would be on fun, relevant activities, created by students and experienced by students. We could also involve parents in events for communication and maybe resources in the community to help students see the relevance and opportunities for careers related to math.

We will continue to explore electronic communication devices and we will explore relevant math topics to share at PTA and BLT meetings.

Thank you:

	District Math Leadership Team	Other
K-1	Ann Marie Doran Carol Kuhn Pat Ochman Nora Polansky	Randi Stern Marie Cassetta Anna Coughlin Jeannine Carr
2 – 3	Kerry Houlihan Denise Healy Colleen Morahan Kim Farry	Beth Lipton
4 – 5	Kerri McBride Colleen Dowling Shannon Sorrentino Karen Sperduto	Mike Fiorentino Stephanie Acito Kathleen Early
6, 7, 8	Jen Segaloff Lisa Rogo Paul Guglielmo	Bill Lee
9, 10, 11, 12	Sheila Silverman Nick Megdanis Jeanne Palumbo Marisa Premus	Ed Bolan Trish Castelli