BERNARDS TOWNSHIP PUBLIC SCHOOLS
BASKING RIDGE, NEW JERSEY

MATHEMATICS PROGRAM EVALUATION

GRADES K - 5

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2008/2009

Mathematics Program Grades K-5 Evaluation

Program Description

The mathematics program for Grades K-5 is part of the comprehensive, elementary school curriculum provided to students in the Bernards Township School District. The mathematics program includes the written curriculum, textbooks, and materials, as well as the classroom instruction and the teachers' preparation of the curriculum. Student assessment is via materials provided by the textbook publishers, teacher made tests and assessments, standardized tests, and teacher observations. The mathematics program provides students in kindergarten through Grade 5 with the tools necessary to become mathematically literate thinkers and creative problem solvers. The mathematics curriculum integrates applicable mathematical content at each grade level with problem solving, communication, reasoning, and technology.

The goals and objectives of the K-5 mathematics program are part of the district's mathematics curriculum (Appendix A). These goals are ground in the National Council of Teachers of Mathematics *Curriculum and Evaluation Standards for School Mathematics* (1990), the National Council of Teachers of Mathematics *Curriculum Focal Points for Pre-Kindergarten through Grade 8 Mathematics* (2006) and the *New Jersey Core Curriculum Content Standards* for mathematics (2002).

The classroom teachers for kindergarten through Grade 5 implement the mathematics curriculum. Students in kindergarten receive 40 minutes of mathematics instruction each day, while students in Grade 1 through Grade 5 receive 60 minutes of mathematics instruction each day. Students are heterogeneously grouped for mathematics as they are for all other subjects. Many individuals provide support for the mathematics program. The elementary grade level teachers, literacy support instructors, special education teachers, and enrichment teachers provide instruction in mathematics to the students in kindergarten through Grade 5. The four elementary school principals allocate funds for the program and make decisions about class scheduling. The elementary principals and assistant principals supervise instruction in each building. The grade level leaders in each building are responsible for the ordering of texts, supplies, and materials associated with the mathematics program and also at times help to support grade level planning. The district's mathematics supervisor provides support for the teachers via staff in-service. The superintendent and board of education provide financial support that enables both the students and the teachers in the program to have adequate textbooks, supplies, and materials. Additionally, the parents of the students provide their children with the necessary preparation, support, and resources.

Textbooks and materials are integral to any instructional program. For the mathematics program the textbook, *Everyday Mathematics*, is the backbone of the program, as the materials were developed as a research-based curriculum project directed by the University of Chicago School Mathematics Project (UCSMP) and funded by the National Science Foundation, The Amoco Foundation, GTE, and other leading corporations. The *Everyday Mathematics* curriculum is the result of the joint efforts of researchers, mathematics educators, administrators, students, and classroom teachers.

Background and Context

This program evaluation is part of the regular curriculum evaluation cycle prescribed by the Bernards Township Board of Education. The last evaluation of the K-5 mathematics program was completed in 2001. The 2001 recommendations were: (1) purchase and implement the updated edition of the *Everyday Mathematics* Program, (2) develop materials that provide for more cohesive student assessment, (3) improve parent communication, (4) implement pacing guidelines, (5) improve monitoring of the curriculum, (6) emphasize the necessity of conducting morning routines and 5-minute math routines, (7) emphasize the necessity of using games.

For the first recommendation (1), purchase and implement the updated edition of the *Everyday Mathematics* Program, the 2001 edition of the *Everyday Mathematics* Program was purchased and implemented. For the second recommendation (2), develop materials that provide for more cohesive student assessment, several changes were made to address this area. In December 2007, teachers in Grades K-5 in the Bernards Township School District completed an open-ended online questionnaire (Appendix B). Teachers reported that they added additional items to unit assessments and created quizzes, study guides, and computational reviews. In addition, teachers developed additional reinforcement work sheets and math centers. Teachers in Grades 3-5 reported that they also created open-ended response items in preparation for the New Jersey Assessment of Skills and Knowledge (NJASK).

For the third recommendation (3), improve parent communication, additional written forms of communication were implemented to improve parent understanding of the *Everyday Mathematics* Program. According to the online questionnaire, teachers reported that the program's family letters, Student Reference Books, and Home Links/Study Links were effective in parent communication. Additionally, teachers used self-created newsletters, websites, and review packets to foster stronger communication with parents. Some teachers sent home completed "End of Unit Assessments" as a means of communication with parents.

For the fourth recommendation (4), implement pacing guidelines, all teachers reported that they instituted the pacing guidelines of the math program throughout the year. Most teachers reported that the pacing guidelines for the program throughout the year were appropriate. Some teachers reported that they needed to adjust the pacing guidelines in reference to sequence of skills and concepts in preparation for NJASK. It was also noted by some teachers that struggling learners in special education/instructional support would benefit from slower pacing at times. In November 2007, teachers in Grades K-5 in the Bernards Township School District completed a multiple-choice survey (Appendix C). According to the survey scores, the pacing guidelines needed addressing in reference to struggling learners and state-test preparation.

For the fifth recommendation (5), improve monitoring of the curriculum, most teachers felt that this had occurred on an on-going basis. According to the survey, scores indicated that on average teachers were satisfied with the monitoring of the curriculum. For recommendation (6), emphasize the necessity of conducting morning routines and five-minute math routines, teachers have incorporated such activities into their daily

schedules. According to the questionnaire, all teachers reported that they use morning routines and Mental Math and Reflexes on a daily basis. For the last recommendation (7), emphasize the necessity of using games, teachers communicated that they incorporate math games into their lessons on a regular basis. According to the questionnaire, all teachers reported that they use games frequently in their lessons. Games were used as reinforcement of new skills and provided differentiation for varied skill levels.

Evaluation Introduction

The mathematics program evaluation committee is headed by the district mathematics supervisor and consists of teachers representing each grade level and each elementary school, teachers representing special education and literacy support, one middle school mathematics teacher, and one high school mathematics teacher. Each of these representatives are stakeholders in the mathematics program and thus could bring biases to the evaluation process. Upon completion, the evaluation of the program, along with recommendations for program improvement, will be presented to the district curriculum committee, the board of education curriculum committee, and the full board of education. The evaluation should help determine whether or not the curriculum and instruction adequately align the goals and objectives outlined in the curriculum and meet the needs of the students in the elementary schools. Additionally the evaluation should give staff, administrators, parents, and students information about student achievement in mathematics as measured by the New Jersey Assessment of Skills and Knowledge (NJASK).

Evaluation Design

The Math Evaluation Committee was responsible for evaluating the program materials and for presenting the final written and oral reports. The members of the evaluation committee were responsible for collecting and analyzing assessment, test, and survey data. First, the committee members analyzed the district's standardized test scores in mathematics for the last five years for Grades 3, 4, 5, 6 and 7 using the NJASK. Second, the committee members analyzed (by grade level) the results of the teacher survey (Appendix C) and the results of the online teacher questionnaire (Appendix B). Third, the committee members analyzed the results of the mathematics attitude survey administered to students in Grade 6 (Appendix D). Fourth, the committee members analyzed the results of the parent survey (Appendix E). The evaluation should answer the following questions.

- How does the mathematics program provide students with meaningful and comprehensive activities?
- How do the textbook and assessment materials adequately address the needs of the students?
- How does the mathematics program provide students with access to technology?
- How does the mathematics program address students' basic computational skills?
- What effect does the mathematics program have on student achievement as measured by standardized tests?
- How does the mathematics program affect students' attitudes towards mathematics?

- How do professional development opportunities in mathematics meet the needs of the K-5 staff?
- How does the time allocated for mathematics align with the timing and pacing of instruction?
- What systems are in place to insure vertical and horizontal curriculum articulation and coordination?

Review of Research

In recent years the mathematics education community has noted a need to revise elementary mathematics to incorporate "connected and integrated mathematical understanding" (Curriculum Focal Points, 2006). Students "need to learn critical mathematical skills, processes, and ways of thinking" and communicate this understanding to others (Curriculum Focal Points, 2006). Results from the Third International Mathematics and Science Study (TIMSS) showed that the traditional math curriculum in the U.S. was an "underachieving curriculum." Research showed that students experiencing meaning-based instruction improved achievement and understanding in mathematics. The *Everyday Mathematics* (EM) curriculum was one of the programs developed as a result of this research to replace the traditional "underachieving curriculum." In addition, it incorporated the NCTM Standards (2000). This curriculum was based on the premise that students can learn more mathematics with a fuller understanding at the elementary level and includes more ambitious topics (Drueck, Fuson, & Carroll, 2000).

According to Carroll (2001), Development of the University of Chicago School Mathematics Project's (UCSMP) elementary program began in the mid-1980s with writing, field-testing, and publication of *Kindergarten Everyday Mathematics*. A large body of research conducted by Professor Max Bell (Bell & Bell, 1988), the director of the UCSMP elementary component, and other educational researchers laid the foundation for this problem-solving curriculum.

A number of studies comparing EM to more traditional mathematics programs were conducted to compare student achievement. EM students' knowledge and understanding of computation, place value, fractions, geometry, measurement, problem solving, etc. was examined and compared to the knowledge and understanding of their peers who were taught using more traditional textbook based programs.

The intervention report by The What Works Clearinghouse (WWC) looked at elementary school math curricula designed to promote math knowledge and skills among elementary school students. They compared five math programs and focused on student achievement in mathematics as the primary outcome. Math achievement was measured by the following types of student outcomes; standardized, nationally normed achievement tests, standardized state or local tests of math achievement, or research-based or locally developed tests or instruments that assess students' mathematical knowledge or skills. Sixty-one studies reviewed by the WWC investigated the effects of *EM*. Of those, only four studies (Carroll, 2001; Riordan & Noyce, 2001; Waite, 2000; and Woodhouse & Baxter, 1997) used experimental designs that met WWC standards. Of the five programs

reviewed in the studies, only *EM* was found to have potentially positive effects on students' mathematics achievement.

In one study, "Longitudinal Study of Children in the Everyday Mathematics Curriculum" (Carroll, 2001) results showed that students who were taught mathematics using *EM* scored higher than their peers in the United States taught using traditional textbook based mathematics programs. The study revealed that students who started with the *EM* program in the first grade showed a greater knowledge of fractions, place value, number sense, etc. by fifth grade than their peers. The study indicated progress as early as third grade when 76% of students answered 3-digit addition problems correctly, 52% 3-digit subtraction (Carroll, 2001). The study reported that although teachers interviewed felt there was "some concern about the computational skills of *EM* students (and more generally, students in Standards-based curricula, where rote computation is given less attention), the results in this area are of special interest (Carroll, 2001)". Results found "…there were no significant differences between the groups… (Carroll, 2001)".

In a National Science Foundation funded study by Drueck, Fuson & Carroll (2000) during the 1994-1995 school year, first graders in six school districts using the *EM* curriculum were tested. "On a broad range of questions, the performance of *EM* students exceeded that of U.S. students receiving traditional instruction and matched or exceeded performance of one of both of the East Asian (Taiwanese and Japanese) samples on many of the questions" (Drueck, et al., 2000). This longitudinal study retested the same *EM* students in the second and third grade.

> Heterogeneous *EM* second graders scored higher than middle to upper middle-class U.S. traditional students on two number sense items, matched them on others, and were equivalent to a middle-class Japanese group. On a computation test, the *EM* second graders outperformed the U.S. traditional students on three items involving three-digit numbers and were outperformed on the six most difficult test items by the Japanese children. *EM* third graders outscored traditional U.S. students on place value and numeration, reasoning, geometry, data, and number-story items (Drueck, et al., 2000).

This study indicated that U.S. students receiving meaning-based instruction, in this case *EM*, performed higher than students receiving traditional instruction and were able to compete favorably with their Japanese peers.

According to Riordan & Noyce (2001), the US Department of Education recognized *Everyday Mathematics* as a "promising" standards-based mathematics program. The authors conducted a study that compares statewide standardized test scores of fourth-grade students using *EM* to test scores of demographically similar students using a mix of traditional curricula. The goal of this study was to examine the impact of curriculum on student achievement with a hypothesis that stated "students in schools adopting certain standards-based programs perform better than those in matched comparison schools on standardized tests aligned with national content standards and, in addition, that these schools demonstrate greater gains in student performance over time" (p. 371). In order to gain results for this hypothesis, the authors obtained sources of data

from school test results from the Massachusetts Educational Assessment Program (MEAP) administered between 1992 and 1996, and both school and individual student results from the 1999 Massachusetts Comprehensive Assessment System (MCAS). The authors examined the difference in test scores between the target curriculum and comparison groups and discovered that these differences were statistically significant. "Students using the *Everyday Mathematics* …curricula outscored their counterparts, with score differences ranging from 2.5 points to 5.7 points on an 80-percent scale that ranges from 200 to 280" (p. 383). The overall results of the study indicated "the positive impact of the standards-based programs on student performance was remarkably consistent across students of different gender, race, and economic status. The study found that students at the top, bottom, and middle of their classes all did better with the standards-based programs than did their counterparts using traditional programs (p. 390).

"A Comparative Analysis of Number Sense Instruction to Reform-Based and Traditional Mathematics Textbooks"(Sood & Jitendra, 2007) recognized that the emphasis on mathematics instruction has shifted from procedural knowledge and rote driven computation to conceptual knowledge. The purpose of this study was to compare how number sense was taught in reform-based and traditional mathematics textbooks. In particular, the study examined the quality of the instructional design features of mathematics programs with an emphasis on number sense instruction for learners at risk for mathematics disabilities.

Results from the study indicated that traditional textbooks (TT) included more opportunities for number relationship tasks than did *EM*. However, *EM* emphasized more real world connections than TT and did better in promoting relational understanding and integrating spatial relationship tasks with other more complex skills. In addition, *EM* provided opportunities for students to go beyond routine exercises to demonstrate their ability to explore and understand numbers; it emphasized guided learning through teacher facilitation, allowing students to infer the concept or skill.

Analysis of Data

Summary of Standardized Test Data

In 2003, the New Jersey state assessment changed from the ESPA to the NJASK for Grade 4. The following year the test expanded to include Grades 3 and 4. Subsequently, in 2006 the test expanded once again to include Grades 3 through 7. The NJASK tests numerical operations, measurement, geometry, data analysis, patterns and algebra and problem solving. Based on the recommendations of the 2001 Mathematics Program Evaluation, current data analysis focused on District Cluster Performance in Numerical Operations and Problem Solving. The committee compared the general and special education populations to the Just Proficient Mean (JPM) of each of the two clusters. Additionally, the district proficiency percentages were compared to District Factor Group (DFG) proficiency percentages (Appendix F). The committee made the following generalizations.

The 2001 committee noted numerical operations as a weakness district wide. The current committee examined the state testing data and found that the students of Bernards Township scored significantly higher than the JPM in Grades 3 through 7. Although there

appeared to be a slight decrease in scores for the special education population in Grades 6 and 7, all students continued to score above the JPM. The 2001 committee also highlighted problem-solving skills as a district weakness. Once again the current committee examined the available testing data and found that students in Bernards Township scored significantly higher than the JPM in Grades 3 through 7. There appeared to be a slight decrease in scores for our special education population between Grades 4 and 5. A greater decrease in the special education population was found between Grades 6 and 7, although all scores remained above the JPM. These deficiencies could be attributed to student mobility within the special education program, the need for more in-depth staff development, and an increase in parent knowledge of the math program. The members of the current committee recommend that the district administration (mathematics supervisor, building level principals, and building level assistant principals) continue to monitor the standardized test scores of students in these classes to determine possible causes and interventions.

The current committee also examined how the district performed on the mathematics portion of the NJASK in relation to schools within the same DFG as Bernards Township. For all data that was found beginning in the year 2004, Bernards Township has had a greater percentage of its students in the proficient range. Bernards Township also had a greater percentage of the student population fall in the advanced proficient range. In 2007, 57.8% of third graders, 70.3% of fourth graders, and 62.8% of fifth graders were advanced proficient compared to 53.2%, 64.6%, and 51.4% for students within the DFG.

According to obtained data, the students in Bernards Township score significantly better than the statewide population. When looking more locally, our students also score better than students within our DFG. Because the district scores are consistently higher than our DFG, the current committee members do not recommend any major changes to the curriculum or the mathematics program at this time, but acknowledge the fact that students can always use additional practice with their computational and problem solving skills. The members of the committee felt that the commitment to extra computational practice will result in increased standardized test scores.

Summary of Teacher Survey Data

Teachers in kindergarten through Grade 6 completed an individual survey and responded to open ended questions. On the scale, teachers chose “5” if the teacher fully agreed with the statement, “4” if the teacher agreed, “3” if the teacher was uncertain, “2” if the teacher disagreed, and “1” if the teacher strongly disagreed (Appendix C). The survey addressed assessment, instruction, differentiation of instruction, teacher behavior and attitudes, curriculum, and instructional materials. Teachers used informal assessment activities, such as games, one-to-one conferences and alternative assessment instruments as a means for assessing students. Teachers also utilized a variety of assessment techniques in order to prescribe appropriate instructional activities for individual students. Teachers felt that they did not have enough assistance in interpreting results of standardized assessments and would like to have more user friendly record keeping sheets. Overall, teachers felt positive about assessment items measuring attainment of the objectives.

Teachers agreed that lesson plans and class instruction are based on objectives and that activities are based on students' previous mathematical experiences. Teachers observed that students are consistently involved in a variety of activities and that students use manipulatives and tools such as counters, pattern blocks, calculators and compasses in learning activities. A majority of teachers felt that they create a positive mathematical learning environment. Teachers expressed a need for additional time to communicate between grade levels. Teachers also agreed that the program should address and evaluate basic computational skills. Teachers suggested that there be more services and provisions made for instructional support, special needs and gifted and talented students.

Curriculum guides are available to the teachers and are consistent with state and local goals and objectives. Teachers thought the Bernards Township mathematics curriculum is easily understood, followed, and is appropriate for each grade level. The program reflected current topics in mathematics education.

Teachers felt that their manuals and the program's materials are well organized, easily retrieved, and are accessible to all teachers, including instructional support and special education. The survey findings showed that teachers needed additional time to evaluate and select supplementary instructional materials as well as time to become more familiar with these materials. In addition, findings showed that teachers needed time for vertical articulation of the leveled goals.

Summary of Student Mathematics Attitude Survey

A twenty-five-item survey was administered to the district's sixth grade students to help assess their attitude towards mathematics. On the scale students chose "5" if the student fully agreed with the statement, "4" if the student agreed, "3" if the student was uncertain, "2" if the student disagreed, and "1" if the student strongly disagreed. Topics in the survey included students' attitude towards mathematics, mathematics class, and students' self-confidence in mathematics (Appendix D).

The overall results of the survey were positive. The majority of students responded that they can learn mathematics. The students surveyed reported getting good grades and felt they can do challenging work. They were secure in their abilities when working on math assignments in class and at home. Students felt self-confident when learning math. Students agreed that their teachers created a positive learning environment and were willing to help them with any questions they had about mathematics. In conclusion, the survey demonstrated students were pleased with the district's mathematics program.

Summary of Parent Survey Data

A ten item survey was administered to parents to help assess their attitude toward the mathematics program. On the scale parents chose "5" if the parent fully agreed with the statement, "4" if the parent agreed, "3" if the parent was uncertain, "2" if the parent disagreed, and "1" if the parent strongly disagreed (Appendix E). These results are obtained from only 51 parents (a very small sample size) and may not be reliable or valid.

In general, many parents viewed the mathematics program favorably. The greatest percentages of “disagree” or “strongly disagree” was in reference to the items addressing whether or not the program met the needs of their child and that the program provided homework assignments that were useful and interesting. Parents also noted that they were not satisfied with the support the program gave to them. These issues should be addressed during the summer curriculum projects.

Summary

The evaluation should strive to answer the nine questions previously listed.

How does the mathematics program provide students with meaningful and comprehensive activities?

First, the results of the district’s standardized tests scores demonstrated congruency between the curriculum and state and national mathematics standards. Second, a review of the research studies indicated that students involved in the *Everyday Mathematics* program have a greater opportunity to learn and demonstrate equal or better performance on standardized tests than do students learning from a traditional mathematics program. Third, the results of the teacher surveys indicated that the mathematics program provides all students with meaningful and comprehensive activities.

How do the textbook and assessment materials address the needs of the students?

Both the standardized test results and the results for all surveys demonstrated that the textbook addresses the needs of the majority of the students. The surveys indicated a concern that the textbook may not meet the needs of the low or the high-ability student, and that teachers were required to supplement for some students. The teacher survey results indicated a need to improve the assessment materials provided with the textbook and to clearly delineate the expected level of student mastery for items found on the unit assessments.

How does the mathematics program address students’ basic computation skills?

Although results of the district’s standardized test scores demonstrated that a large majority of the students become proficient in computational skills by the end of Grade 6, and that average student score increases from Grade 2 to Grade 6, the parent and teacher surveys demonstrated concern for students’ computational skills. The revised textbooks and materials, and the summer curriculum-writing project should address this concern.

How does the mathematics program provide students with access to technology?

Once again a majority of the parents responding to the survey verified the students’ use of technology. Beginning in kindergarten, students learn to appropriately use technology.

The last five questions (What effect does the mathematics program have on student achievement as measured by standardized test, How does the mathematics program affect students' attitudes towards mathematics, How do professional development opportunities in mathematics meet the needs of the K-5 staff, How does the time allocated for mathematics align with the timing and pacing of instruction, What systems are in place to insure vertical and horizontal curriculum articulation and coordination) have been answered in the appropriate sections of this report and should be addressed during various summer curriculum writing projects.

Recommendations

Based upon the data and research, the Mathematics Program Evaluation Committee made the following recommendations:

1. Purchase and implement the updated editions (2008) of the *Everyday Mathematics* (EM) program. After reviewing the updated materials, the teaching staff and the members of the committee have determined that the updated editions will enhance the mathematics program. Based on data analysis of standardized test data, our students currently exceed proficiencies in relation to schools within the same DFG as Bernards Township. Research also supports a potentially positive affect on scores compared to programs using a traditional textbook. The committee made the recommendation early in the process that a traditional textbook would not align with the district's philosophy of student learning at the elementary grades. Teachers feel materials in the EM Program overall are well organized, easily retrievable, and accessible. Students feel confident with mathematics and have a positive attitude towards learning new concepts. The members of the Mathematics Evaluation Committee have decided it is more cost effective to adopt the 2008 EM edition rather than to implement an entirely new program, based on materials and staff development. The members agree that a more seamless implementation will result from adopting the updated version of EM due to the fact that now more than 50% of students nationwide use EM materials, making it more likely than ever that new hires will be familiar with the materials.

2. Develop materials that will provide for increased computational fluency. Because the *Everyday Mathematics* program is a curriculum project, the members of the evaluation committee recommend that summer curriculum writing focus on developing materials to provide for more practice to improve fluency with respect to basic computational skills. The members of the evaluation committee suggest considering the following when choosing a program to address computational fluency: learning objectives, student proficiency levels, state standards, and the National Council of Teachers of Mathematics (NCTM) Focal Points. It is suggested that the members of the summer curriculum writing project research and develop/adopt leveled materials to align to the curriculum and outline a standardized implementation of the materials.

3. Develop pacing and sequencing guidelines. The EM materials do provide a scope and sequence that will be included in the district curriculum guides. The members of the evaluation committee recommend that summer curriculum writing focus on developing suggested pacing guidelines for including additional materials for computational fluency. Also, the summer curriculum writing committee members should consider redesigning EM sequencing guidelines to adequately prepare students for standardized testing.

4. Expand staff development. This recommendation is the responsibility of the district mathematics supervisor as well as the building administrators. To address this recommendation, the members of the committee believe that the mathematics supervisor should develop a comprehensive staff development plan that will differentiate to meet the needs of the teachers, revise the new teacher in-service to better address the needs of new staff, and create an in-service program for administrators.

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Appendix A

Mathematics Program Mission Statement and Goals
Mathematics K-12

In the Bernards Township District, we envision a K-12 mathematics program that provides all students with access to high quality mathematics instruction that empowers them to better understand the issues of a technological society. There are ambitious expectations for all students, along with provisions for students with different abilities and learning styles. The mathematics curriculum is rich. All students are engaged in worthwhile mathematics tasks that allow them to understand mathematics through a problem-centered, concept oriented instructional approach.

Goals:

- All students will become effective problem solvers, risk takers, and independent thinkers.
- All students will become mathematically competent, developing fluency with facts and procedures.
- All students will communicate mathematics.
- All students will use technologies and other tools and as a means to broaden their understanding about mathematics.
- All students will value mathematics for its practicality and usefulness.
- All students will connect mathematical concepts both within mathematics and between mathematics and other disciplines.

Appendix B

Teacher Questionnaire

Do you include additional test and assessment items for each unit? Please specify.

In what ways does the program provide for effective parent communication? (i.e.: introduction of new concepts)

Are the pacing guidelines outlined in the scope and sequence of each unit appropriate for your grade level? If not, why? (The pacing guidelines are located in the overview of each unit and in the Mathematics Curriculum)

(Grades K-2) Do you do a morning routine (calendar, counting days, weather, etc.)? (Grades 3-5) Do you do a 5-minute routine (Mental Math and Reflexes)? How often? If not, please explain why.

How often do you use games in your math lessons? In what way do you use them?

If we were to continue to use The Everyday Math Program, what improvements would you hope to see in the new edition? What would you like to see remain the same?

Appendix C

Teacher Survey

K-5 Mathematics Program Evaluation
Teacher Survey Results

Directions: Using a scale from 1 (the lowest) to 5 (the highest), please record your answers appropriately.

Assessment

1. To what extent are assessment items appropriate for measuring the student attainment of the objective? (3.5)
2. To what extent are teachers aware of alternative assessment instruments as a means for assessing student attainment? (3.5)
3. To what extent are teachers aware of informal assessment activities, such as games, partners, or one-on-one conferences as a means for assessing student attainment? (4.2)
4. To what extent are teachers assisted in interpreting results of and in utilizing a variety of assessment measures? (2.8)
5. To what extent do teachers use assessment techniques for prescribing appropriate instructional activities for individual students? (3.7)
6. To what extent are the record keeping sheets in the teacher's manual an acceptable method for recording student progress? (2.9)

Instruction

7. To what extent are lesson plans and actual class instruction based on objectives? (4.6)
8. To what extent are activities based on students' previous mathematical experiences? (4.2)
9. To what extent do instructional activities regularly include problem solving involving mathematical applications meaningful to students? (3.8)
10. To what extent are available manipulative (counters, pattern blocks) used by students in learning activities? (4.3)
11. To what extent do teaching practices include large-group, small-group, and individualized instruction as appropriate to each lesson? (4.2)
12. To what extent are students appropriately involved in a variety of activities? (4.3)
13. To what extent is the pacing of each lesson matched with the students? (3.2)
14. To what extent is the pacing of each lesson matched with the content? (3.4)
15. To what extent are mathematical tools (calculator, compass, and template) incorporated in the learning activities? (4.3)
16. To what extent do teachers employ teaching styles compatible with students' learning styles? (4.1)
17. To what extent does the teacher create a positive learning environment? (4.8)
18. How effective is the communication of student progress to students and parents? (4.1)

19. To what extent does the principal provide instructional leadership and support for the mathematics program? (3.4)
20. To what extent are volunteers used to assist with the implementation of the mathematics program? (2.0)
21. To what extent are provisions made for gifted and talented students? (3.0)
22. To what extent are provisions made for instructional support students where needed? (3.4)
23. To what extent are services available for special needs students? (3.3)
24. To what extent is time allotted for communication between grade levels? (1.6)
25. To what extent does the program evaluate the students' basic computational skills? (2.8)

Curriculum

26. To what extent are there system approved curriculum guides available for each teacher in the school? (4.5)
27. To what extent are the guides current and consistent with state and local goals and objectives? (4.5)
28. To what extent have various groups been involved in developing the mathematics program, (i.e. teachers, administrators, community members, etc.)? (3.9)
29. To what extent is the mathematics curriculum understood and followed? (4.5)
30. To what extent is the level of the content appropriate for the grade level? (4.2)
31. To what extent are there meaningful applications within the mathematics program content? (3.9)
32. To what extent does the mathematics program reflect current topics in mathematics education? (4.0)

Instructional Materials

33. To what extent are established procedures used to evaluate and select supplementary instructional materials? (2.8)
34. To what extent are provisions made for teachers to participate in the evaluation of materials? (3.1)
35. To what extent are provisions made for teachers to become familiar with the selected materials before using them with their students? (2.7)
36. To what extent are materials organized for easy retrieval? (4.0)
37. To what extent are the materials easily accessible to the teacher? (4.2)
38. To what extent are the materials periodically reviewed and updated? (3.8)
39. To what extent are a variety of materials available and matched with the instructional program? (3.7)
40. To what extent are the teachers aware of the leveled goals of the grades prior to what they teach? (3.0)

Appendix D

Grade 6 Survey and Results

K-5 Mathematics Evaluation
Student Survey

Directions: Use the following scale to respond to each statement.

5 – Strongly agree, 4 – Agree, 3 – Uncertain, 2 – Disagree, 1 – Strongly disagree

1. I am sure that I can learn mathematics.
2. Generally, I have felt secure about attempting mathematics.
3. I am sure I could do challenging work in mathematics.
4. I think I can handle more difficult mathematics.
5. I get good grades in mathematics.
6. I have a lot of self-confidence when it comes to math.
7. I struggle with math.
8. I don’t think I can do advanced mathematics.
9. For some reason even though I study, math seems unusually hard for me.
10. Most subjects I can handle well, but I have difficulties in math.
11. Math is my worst subject.
12. Math is my best subject.
13. I don’t usually worry about being able to solve math problems.
14. I rarely get nervous during a math test.
15. I am comfortable during math tests.
16. I rarely need assistance during a test.
17. I usually have been at ease in math classes.
18. Mathematics makes me feel uncomfortable, restless, irritable, and impatient.

19. I find math class to be very interesting.

20. I can work independently on math homework at home.

21. I think my teachers (K-6) have spent enough time covering each topic or concept.

22. I feel that there is not enough time to learn new math concepts because we move too quickly.

23. Overall, I feel my teachers (K-6) have created a positive learning environment when it comes to math.

24. I feel my teachers (K-6) have been willing to help me with any questions I have had about math.

25. Overall, I like the Math Program that I have used in grades K-6.

Use the following scale to respond to each statement. 5 – Strongly agree, 4 – Agree, 3 – Uncertain, 2 – Disagree, 1 – Strongly disagree

1. I am sure that I can learn mathematics.
Average rank = (4.6)
2. Generally, I have felt secure about attempting mathematics.
Average rank = (4.3)
3. I am sure I could do challenging work in mathematics.
Average rank = (3.9)
4. I think I can handle more difficult mathematics.
Average rank = (3.7)
5. I get good grades in mathematics.
Average rank = (4.2)
6. I have a lot of self-confidence when it comes to math.
Average rank = (4.2)
7. I struggle with math.
Average rank = (1.9)
8. I don't think I can do advanced mathematics.
Average rank = (2.2)
9. For some reason even though I study, math seems unusually hard for me.
Average rank = (1.9)
10. Most subjects I can handle well, but I have difficulties in math.
Average rank = (1.9)
11. Math is my worst subject.
Average rank = (1.8)
12. Math is my best subject.
Average rank = (3.4)
13. I don't usually worry about being able to solve math problems.
Average rank = (3.9)
14. I rarely get nervous during a math test.
Average rank = (3.6)
15. I am comfortable during math tests.
Average rank = (4.0)
16. I rarely need assistance during a test.
Average rank = (4.0)
17. I usually have been at ease in math classes.
Average rank = (4.1)
18. Mathematics makes me feel uncomfortable, restless, irritable, and impatient.
Average rank = (1.5)
19. I find math class to be very interesting.
Average rank = (3.3)
20. I can work independently on math homework at home.
Average rank = (4.6)

21. I think my teachers (K-6) have spent enough time covering each topic or concept.
Average rank = (4.0)
22. I feel that there is not enough time to learn new math concepts because we move too quickly.
Average rank = (2.2)
23. Overall, I feel my teachers (K-6) have created a positive learning environment when it comes to math.
Average rank = (4.2)
24. I feel my teachers (K-6) have been willing to help me with any questions I have had about math.
Average rank = (4.4)
25. Overall, I like the Math Program that I have used in Grades K-6.
Average rank = (3.9)

Appendix E

Parent Survey and Results

K-5 Mathematics Evaluation
Parent Survey

Directions: Using a scale from 1 to 5, (5 – strongly agree, 4 – agree, 3 - uncertain, 2 – disagree, 1 – strongly disagree) please respond to the following items. Base your ratings on your observations of your child's experiences.

1. The mathematics program develops skills in problem solving and higher-order thinking.

2. The mathematics program develops skills in computation, estimation, and mental arithmetic.

3. The mathematics program develops skills in measurement, geometry, probability, and statistics.

4. The mathematics program provides students with a variety of relevant or real world experiences.

5. The mathematics program meets my child's needs.

6. The mathematics program uses technology (calculators, computers, etc.) to enhance my child's understanding of mathematics.

7. The mathematics program encourages my child to use and value mathematics.

8. The mathematics program provides homework assignments that are useful and interesting.

9. The materials provided by the math program help my child learn mathematics.

10. The mathematics program provides me with adequate support to assist my child at home.

Additional Comments:

K-5 Mathematics Evaluation
Parent Survey Results

Total records in survey: 51
Percentage of total: 100.00%
Field Summary for 1:
The mathematics program develops skills in problem solving and higher-order thinking.
Answer Count Percentage
No answer 0.00%
(1) 1.96%
(2) 15.69%
(3) 27.45%
(4) 39.22%
(5) 15.69%
Field Summary for 2:
The mathematics program develops skills in computation, estimation, and mental arithmetic.
Answer Count Percentage
No answer 0.00%
(1) 1.96%
(2) 17.65%
(3) 13.73%
(4) 50.98%
(5) 15.69%
Field Summary for 3:
The mathematics program develops skills in measurement, geometry, probability, and statistics.
Answer Count Percentage
No answer 0.00%
(1) 3.92%
(2) 13.73%
(3) 25.49%
(4) 43.14%
(5) 13.73%
Field Summary for 4:
The mathematics program provides students with a variety of relevant or real world experiences.
Answer Count Percentage
No answer 0.00%
(1) 5.88%
(2) 19.61%
(3) 21.57%
(4) 37.25%
(5) 15.69%

Field Summary for 5:
The mathematics program meets my child's needs.
Answer Count Percentage
No answer 0.00%
(1) 17.65%
(2) 27.45%
(3) 17.65%
(4) 23.53%
(5) 13.73%
Field Summary for 6:
The mathematics program uses technology (calculators, computers, etc.) to enhance my child's understanding of mathematics.
Answer Count Percentage
No answer 0.00%
(1) 3.92%
(2) 17.65%
(3) 41.18%
(4) 31.37%
(5) 5.88%
Field Summary for 7:
The mathematics program encourages my child to use and value mathematics.
Answer Count Percentage
No answer 0.00%
(1) 7.84%
(2) 21.57%
(3) 15.69%
(4) 45.10%
(5) 9.80%
Field Summary for 8:
The mathematics program provides homework assignments that are useful and interesting.
Answer Count Percentage
No answer 0.00%
(1) 17.65%
(2) 19.61%
(3) 21.57%
(4) 39.22%
(5) 1.96%
Field Summary for 9:
The materials provided by the math program help my child learn mathematics.
Answer Count Percentage
No answer 0.00%
(1) 9.80%
(2) 15.69%
(3) 21.57%
(4) 43.14%
(5) 9.80%

Field Summary for 10:
The mathematics program provides me with adequate support to assist my child at home.
Answer Count Percentage
No answer 0.00%
(1) 11.76%
(2) 27.45%
(3) 13.73%
(4) 29.41%
(5) 17.65%

Appendix F

K-5 Mathematics Evaluation
District Standardized Test Data and Summary

Summary of District Cluster Performance - NJASK

NJASK 2007	Numerical Operations										Problem Solving									
	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 3		Grade 4		Grade 5		Grade 6		Grade 7	
	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio
Total Points	9		13		10		9		10		12		23		25		21		36	
JPM	4	0.44	6.4	0.49	4.6	0.46	4.2	0.54	3.5	0.35	3	0.25	7.6	0.33	10.1	0.4	6.1	0.29	12	0.33
Total Students	7.5	0.83	10.9	0.84	8.4	0.84	7.1	0.79	6.3	0.63	8.4	0.7	17.4	0.76	17.5	0.7	14	0.68	20.9	0.58
General Pop.	7.7	0.86	11.2	0.86	8.7	0.87	7.3	0.81	6.6	0.66	8.6	0.72	17.9	0.79	18	0.72	15	0.71	22	0.61
Special Ed.	6.5	0.72	9.6	0.74	7.1	0.71	5.9	0.66	4.1	0.41	7.5	0.63	14.9	0.65	14.9	0.6	10	0.49	13.9	0.39

NJASK 2006	Numerical Operations										Problem Solving									
	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 3		Grade 4		Grade 5		Grade 6		Grade 7	
	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio
Total Points	9		13		10		9		10		16		28		37		37		37	
JPM	3.2	0.36	6	0.46	4.8	0.48	4.7	0.56	3.3	0.33	3.9	0.24	9.4	0.34	16.8	0.45	16	0.43	11.9	0.32
Total Students	6.4	0.71	10.3	0.79	8.4	0.84	7.1	0.79	6.9	0.69	10.4	0.65	20.4	0.73	28.3	0.76	28	0.75	22.3	0.6
General Pop.	6.5	0.72	10.6	0.82	8.5	0.85	7.3	0.81	7.2	0.72	10.5	0.66	21.2	0.76	28.9	0.78	29	0.77	23.1	0.62
Special Ed.	6.4	0.71	8.8	0.68	7.3	0.73	5.6	0.62	4.6	0.46	9.5	0.59	16.9	0.6	24.9	0.67	21	0.57	15.1	0.41

NJASK 2005	Numerical Operations										Problem Solving									
	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 3		Grade 4		Grade 5		Grade 6		Grade 7	
	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio
Total Points	10		13								22		32							
JPM	4	0.4	6	0.46							9.3	0.42	13.3	0.42						
Total Students	7.7	0.77	10.3	0.79							17.2	0.78	22.2	0.69						
General Pop.	7.8	0.78	10.5	0.81							17.6	0.8	22.5	0.7						

Special Ed.	6.9	0.69	9.7	0.75		15	0.68	20.8	0.65	

NJASK 2004	Numerical Operations										Problem Solving									
	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 3		Grade 4		Grade 5		Grade 6		Grade 7	
	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio
Total Points	9		13								25.5		33							
JPM	5.4	0.6	7.3	0.56							12.3	0.48	12.9	0.39						
Total Students	7.6	0.84	10.7	0.82							19.8	0.78	22.4	0.68						
General Pop.	7.8	0.87	10.9	0.84							20.4	0.8	23.1	0.7						
Special Ed.	6.8	0.76	9.6	0.74							17.4	0.68	19.2	0.58						

NJASK 2003	Numerical Operations										Problem Solving									
	Grade 3		Grade 4		Grade 5		Grade 6		Grade 7		Grade 3		Grade 4		Grade 5		Grade 6		Grade 7	
	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio	Raw	Ratio
Total Points			13										32							
JPM			7.7	0.59									15.6	0.49						
Total Students			10.6	0.82									23.2	0.73						
General Pop.			10.8	0.83									23.8	0.74						
Special Ed.			9	0.69									18.8	0.59						

Legend

JPM = Just Proficient Mean

Raw = District Cluster Performance

Ratio = raw score/total points

District Proficiency % vs. DFG Proficiency %

	2003			2004			2005			2006		
	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5	Grade 3	Grade 4	Grade 5
District Prof. Combined		91.3		95.3	93.4	NA	96.3	96.7	NA	98.8	96.5	97.8
District Proficient		40.4		49.9	43.9	NA	42.3	43.1	NA	43.1	27.3	40.2
District Advanced Proficient		50.9		45.4	49.5	NA	54	53.6	NA	55.7	69.2	57.6
DFG Prof. Combined				90.3	NA		95.2	92.5	NA	96.4	95	94.4
DFG Proficient				53.8	NA		47.2	44.7	NA	45.8	32	45.3
DFG Advanced Proficient				36.5	NA		48	47.8	NA	50.6	63	49.1

	2007				
	Grade 3	Grade 4	Grade 5	GEPA	HSPA
District Prof. Combined	97.8	97.6	96.7	93.8	94.8
District Proficient	40	27.3	33.9		
District Advanced Proficient	57.8	70.3	62.8		
DFG Prof. Combined	97	96.5	95.3	91.7	93.8
DFG Proficient	43.8	31.9	43.9		
DFG Advanced Proficient	53.2	64.6	51.4		