

# NEW SPRINGS SCHOOLS K-8 CURRICULUM OUTLINE

The objectives and goals in the School’s curriculum are built upon the New Florida Standards. The School will implement the Hillsborough County Public School, Student Progression Plan, as a vehicle to guide the progression and implementation of the curriculum to be taught.

The School’s curriculum will focus on clear and measurable expectations for student learning and covers the main subject areas of Reading/Language Arts, Mathematics, Social Studies, and Science. In addition, the School offers elective classes such as Art, Music, Computer, Foreign Language, and Physical Education. The curriculum will continuously reflect high quality instruction and implement research – based strategies, innovations and activities that facilitate achievement for all students.

The school will have the following in place to prepare students in achieving the New Florida Standards and Next Generation Sunshine State:

- Scope and sequence of essential New Florida Standards - based on nine-week intervals, in each content area
- Continuous review/monitoring of curriculum to ensure teacher’s delivery and pacing of State Standards
- Regular classroom observations to ensure the implementation of the New Florida Standards with focus, coherence, rigor, and higher expectations
- School Accountability Plan that will be used as a continuous improvement tool and to ensure that the curriculum goals are being accomplished
- Use of multiple measures and assessment data to inform instruction and make curriculum decisions and plan interventions
- Professional Learning Communities (PLC) among grade level teams, departments, and leadership teams
- Ongoing relevant professional development workshops
- Increase reading of informational and higher complexity text, focus on text based answers, and writing from sources across the curriculum

The table below shows the summary of the core curriculum programs with the grade levels they are used. The details of these programs are explained later in this section.

<b>Subject</b>	<b>Core Curriculum Programs and Grade Levels used</b>
Reading/ELA	Reach for Reading (3-5) and Imagine It (K-2) Holt McDougal Series (6-8) INSIDE - National Geographic (6-8)
Mathematics	Go Math (K-5) Everyday Math (K-5) CPM - College Preparatory Mathematics (6-8) Pacemaker Basic Math (6-8)
Science	STC - Science and Technology for Children (K-5) Glencoe Science (6-8)
Social Studies	My World (3-5) McDougal Littell, Holt, Rinehart & Winston, Prentice-Hall Series (6-8)

## ELEMENTARY SCHOOL CURRICULUM

### **Elementary English Language Arts**

The goal of the LAFS aligned ELA curriculum is to increase rigor in core and intervention instruction and improve student proficiency on grade level outcomes & graduate all students ready for middle-high school and college and career in the long run. In return, students will be able to build knowledge through content-rich text, to use evidence in reading, writing & speaking, and to practice complex text and academic language. The School will use research based Imagine it and Reach for Reading as the Elementary Comprehensive Core Reading and English Language Arts program. The School's text selection may be modified as per the Sponsor's text adoption and modification to the Comprehensive Core Reading Program (CCRP) throughout the duration of the charter. The CCRP correlates to all LAFS. The CCRP is the tool used to provide initial and differentiated instruction and is used to expose and instruct students on grade level.

All students will participate in a daily, 90-minute block of uninterrupted reading instruction following the high quality, explicit, and systematic initial instruction in the Imagine it and Reach for Reading. The School will utilize computer assisted intervention programs such as Study Island.

The CCRP provides explicit lessons for whole group instruction that includes introduction of skills, modeling, teaching, independent and guided application, and review of skills and concepts. Techniques such as modeling, previewing and predicting, visualizing, summarizing, and direct instruction in strategic reading are embedded throughout the program. The Comprehensive Core Reading Program (CCRP) provides guidance to teachers in delivering differentiated instruction for diverse learners within the reading block. The program contains integral instructional sequences coordinated by strand of instruction and are carefully planned to move from cognitively simple skills to more complex skills. Daily lessons for small group differentiated instruction revolve around using leveled materials to provide numerous practice opportunities for mastery of skills and strategies.

Activities are organized to meet the needs of on-level learners, advanced learners, below-level learners, and English-language learners. The program integrates a scope and sequence within the daily lesson plans that affords teachers guidance in delivering strategy and skill instruction based on student needs. Aligned instructional materials, such as decodable books and leveled books, are used for individual and group practice opportunities. A variety of assessment opportunities, both informal and formal, are included in the comprehensive core reading program and are used regularly to monitor students' progress and match students with appropriately leveled text.

As part of universal instruction, all students will be provided a daily, 90-minute block of uninterrupted reading instruction following the high quality, explicit, and systematic initial instruction of the Imagine it and Reach for Reading Comprehensive Core Reading Program (CCRP). Below is an example of 90 minute Reading Block with Additional Time for Immediate Intensive Intervention (iii):

*\* This sample class has four small flexible groups that are formed based upon broad screen/progress monitoring and on-going progress monitoring assessment results. The teacher meets with two groups daily during sessions 1 and 2. While working with groups 3 and 4 on a rotating basis, group 3 receiving small group instruction 3 days per week, and group 4 receiving small group instruction 2 days per week. When students are not at the teacher-led station receiving explicit instruction, students will be working in small groups at literacy centers/stations reinforcing skills taught during whole group/teacher-led small group.*

Imagine it and Reach for Reading programs are an explicit, systematic, and include interactive instructional design focused on the six essential elements of reading instruction (phonemic awareness, phonics, fluency, vocabulary, oral language, and comprehension).

The six elements of reading instruction includes:

### **Phonemic Awareness**

Phonemic awareness, or manipulating phonemes in words, is a necessary prerequisite for successful phonics instruction and learning the decoding process. In an extensive meta-analysis of 52 studies, the National Reading Panel (2000) determined that teaching children phonemic awareness was highly effective under a variety of teaching conditions, grades, and age levels, significantly improving reading more than instruction that lacked explicit lessons in PA.

Phonemic Awareness instruction in both Imagine it and Reach for Reading programs is based on this research and supports following attainment of beginning levels of understanding and skill that is driven primarily by instruction and practice in the use of phonemic decoding strategies in reading.

### **Phonics**

Phonics instruction focuses on the acquisition of letter-sound correspondences and their use in reading and spelling. In both imagine it and Reach for Reading programs, phonics is taught sequentially and cumulatively with multiple opportunities for applying the skills into decodable text. The programs include daily lessons to ensure that students are explicitly taught the process of blending individual sounds into words.

### **Fluency**

Fluency in reading is the ability to read text accurately and with proper expression at an appropriate speed. According the National Reading Panel (2000), fluency is one of several critical factors necessary for reading comprehension. “If text is read in a laborious and inefficient manner, it will be difficult for the child to remember what has been read and to relate the ideas expressed in the text to his or her background knowledge.” The ability to process text accurately and effortlessly includes blending words together quickly and instantaneous recognition of high-frequency words. Fluent reading develops over time, starting in kindergarten and first grade with lessons on phonemic awareness, phonics, and automaticity of word recognition. Lessons on these key components of fluency are included in both Imagine it and Reach for Reading programs, along with daily opportunities for teachers to model fluent reading through read alouds, demonstrations, shared reading, and modeled strategies.

### **Vocabulary**

Lessons on word meaning, strategies for making vocabulary connections, and the link between vocabulary and comprehension are embedded into each daily reading lesson and all parts of the 90-minute reading block. According to Donald Bear (2005), research supports explicit and systematic vocabulary instruction involving active study of words before, during, and after reading text. Both imagine it and Reach for Reading provide daily opportunities for students to

learn vocabulary through extensive reading in rich contexts, oral language development, multiple encounters with words, and direct teaching of key ideas, concepts, and connections to other words.

### **Oral Language**

Oral language is an important link in the process of children's learning and thinking development, providing a foundation for the development of other language-based skills, including reading and writing. It is through speech that children learn to organize their thinking and focus their ideas (Lyle, 1993). A variety of oral language based activities are incorporated throughout both core programs, including partner pair, guided practice, summarizing and retelling, picture chats, and weekly "Talk About It" lessons. These activities build children's vocabulary, increase communication skills, and foster connections with language in print form.

### **Comprehension**

Comprehension is the key element in reading. It includes making sense of words, connecting ideas between text and prior knowledge, and constructing and organizing meaning from print. Readers must be able to understand the meaning of the literal words read and create a broader understanding of the meaning implied from the text (Kintsch, 1998). The process of comprehension is strategic and interactive, involving the ability to apply, synthesize, and interact with what is being read (Adams, 1998; Harvey & Goudvis, 2000; Moats, 2000). The National Reading Panel (2000) identified strategies that have been shown to have a firm scientific basis for improving reading comprehension, including monitoring comprehension, using graphic organizers, answering questions, generating questions, recognizing text structures, and summarizing. Both comprehensive core programs feature systematic and explicit comprehension instruction using these strategies. The instruction builds prior background knowledge, and applies metacognitive skills and multi-level questioning to help students maintain comprehension that supports the promotion of higher-level thinking. Direct comprehension instruction is provided through explicit explanations of strategies, teacher modeling, and guided practice. Students are given multiple opportunities to apply these strategies through scaffold teacher support with leveled text during small group instruction and independent reading.

Supplemental resources will be used to differentiate instruction for all students (Tiers I, II, and III). When data shows that students need additional explicit and intensive instruction in one specific component of reading (i.e., oral language, phonemic awareness, phonics, fluency, vocabulary, or comprehension) supplemental resources can be used as an extension beyond the universal Tier I initial instruction of a Comprehensive Core Reading Program (CCRP) for all students. As part of Tier II (strategic) or III (intensive) intervention instruction, Supplemental Intervention Reading Programs (SIRP) are implemented to provide targeted intervention support to meet the specific differentiated needs of struggling readers. The School will also use supplemental programs such as Study Island, Accelerated Reader (AR) as to meet student-learning needs in specific areas. Details will be provided in the School's Reading curriculum section below.

Students will progress through a reading curriculum that emphasizes phonemic awareness and decoding skills in its early stages and builds towards the ability to read, comprehend, and interpret prose and poetry of different genres. The curriculum will guide students through basic

phonics skills starting with identification of syllables and phonemes, blending, and decoding to the ability to sound out unfamiliar multisyllabic words to recognition of irregularly spelled words and fluent reading and strong comprehension skills. Acquisition of an extensive and advanced vocabulary will be emphasized at every level.

Students will have regular and frequent lessons and practice in the writing of Standard English. Lessons will develop mastery of the principles and applications of correct grammar - including knowledge of the parts of speech, punctuation, spelling, sentence structure, and paragraph structure, with ample opportunity to practice and reinforce writing skills in compositions and essays and to develop both writing style and creativity through the writing of poetry and prose.

### Reach for Reading

Reach for Reading is a K-6 reading and language arts program built to meet the demands of the Common Core State Standards. It includes explicit and systematic whole and small group instruction at all grades with engaging reading resources including authentic leveled libraries, motivating main selections, and relevant, meaningful practice.

Reach for Reading is built around unit themes and Big Ideas with each unit focusing on either a science or social studies topic. Teachers will teach reading strategies and provide students with strategies to access complex text through content-based selections, including National Geographic exclusives.

Reach for Reading is also structured and flexible to adapt to the needs of individual classrooms and teaching philosophies. With Reach for Reading students will increase comprehension, fluency and knowledge through high-interest, age appropriate National Geographic texts, videos, and images. All resources are also available through an interactive digital platform, myNGconnect that includes eEditions, recording options for fluency, customizable lesson plans, eAssessment, and more.

## **Elementary Mathematics**

Math Curriculum incorporates New Florida Standards. The incorporation of New Florida Standards has necessitated an instructional shift that would require Focus, Coherence and Rigor. By focusing strongly where the standards focus, teachers will significantly narrow the scope of content, deepen how time and energy is spent in the math classroom and focus deeply only on what is emphasized in the standards, so that students gain strong foundations. The coherent math curriculum will require teachers to think across grades and link to major topics within grades. They will carefully connect the teaching within and across grades so that students can build new understanding onto foundations built in previous years. They will also begin to count on solid conceptual understanding of core content and build on it since each standard is not a new event, but an extension of previous learning. Students will experience rigorous learning experience

where intensity will be equal in solid conceptual understanding, procedural skill/fluency, and application of skills in problem solving situations.

Teachers will

- teach more than “how to get the answer” and instead support students’ ability to access concepts from a number of perspectives
- educate students to see math as more than a set of mnemonics or discrete procedures
- support fluency and application by focusing on conceptual understanding
- structure class time and/or homework time for students to practice core functions such as single-digit sums or multiplication so that they are more able to understand and manipulate more complex concepts and have students gain speed and accuracy in calculation
- teach students how to use appropriate concepts and procedures for application even when not prompted to do so
- provide opportunities at all grade levels for students to apply math concepts in “real world” situations, recognizing this means different things in K-5, 6-8, and HS

The mathematics curriculum will be integrated throughout the entire NSS curriculum to the greatest extent possible. Teachers in content areas outside of math, particularly science, ensure that students are using grade-level-appropriate math to make meaning of and access science content.

The incorporation of the New Florida Standards will help develop Mathematical Expertise through the standards for Mathematical practices that are listed below:

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

Accepted as a philosophy that “all children can learn,” NSS will not track students into large groups, but will instead provide individualized tutoring, small group work in centers and extra practices for those students who need more time to master complex concepts.

Students will have extensive experience in making data, tables, graphs, and geometric sketches and will be able to use them to clearly describe a wide variety of patterns and relationships. Students will examine the limitations of mathematical models in describing and predicting events in the real world. They will be encouraged to state their own criteria for what is a satisfactory result and to discuss their judgments in terms of their purpose.

Students will be able to understand the mathematical significance of the arithmetic and algorithmic operations that they perform. By focusing on the 'why' behind the algorithmic

procedures, NSS will be preparing students for the further study of mathematics as well as the quantitative literacy of daily life.

According to the National Council of Mathematics Teachers, a shift is needed from traditional 'paper and pencil' approaches which emphasize computation and rote learning to an approach which emphasizes the child gaining mathematical insight, reasoning, and problem solving skills. NSS will focus on creating a developmentally appropriate math curriculum where children are encouraged to understand the conceptual bases and quantitative analysis of mathematical relations. NSS believes that the logical thought processes of mathematics are necessary to the development of critical thinking. Through exposure to the basic courses, students not only attain the computational skills needed for everyday life but also develop their ability to think clearly and to present their thoughts in a precise, well-organized fashion. The program will be flexible in that it satisfies the needs of students who are not particularly mathematically oriented, while providing the challenge and interest necessary for those who want a sound mathematical background on which to base further study.

The mathematics curriculum will be integrated throughout the entire NSS curriculum to the greatest extent possible. It will offer a range of courses to meet the students' different developmental and ability levels. In order to implement the school mathematics curriculum, NSS will adopt the proven instructional mathematics curricula Everyday Mathematics and Go Math that will be discussed in detail later on.

In addition to Everyday Mathematics and Go Math, manipulatives will be integrated into the math classes. One reason that students struggle in mathematics is that they consider it to be a highly abstract subject. Using manipulatives can be a very effective tool to help students move from abstract thinking to concrete thinking (Stein, & Bovalino, 2001)<sup>1</sup>. Manipulatives, such as pattern blocks, fraction circles, and square tiles, can contribute to the students' understanding of mathematical ideas by giving them concrete ways to compare and operate on quantities.

However, the use of manipulatives is not enough for conceptual understanding. It is important that teachers guide students in discovering mathematical ideas so lessons will be designed to teach rather than showing students how to work problems step-by-step. NSS believes that students should actively construct their own knowledge within the academic environment. Additionally, students need to work with multiple representations, such as concrete materials, graphs, verbal statements, tables, and/or symbols, to have a richer understanding of mathematical concepts.

By using manipulatives, NSS will help students focus on mathematical ideas rather than mass calculation. In order to enhance the students' understanding of mathematics, the teachers will use the navigations series published by the National Council of Teachers of Mathematics.

NSS recognizes that the mathematics teachers' subject-area content and pedagogical knowledge will affect the students' achievement level. In order to increase the teachers' knowledge in both areas, NSS will have scheduled workshops every semester to discuss mathematical tasks and the best ways to teach them to the students. Moreover, NSS will encourage the teachers to plan their

lessons collaboratively to encourage the sharing of ideas and to improve each teacher's instructional skills.

If a student struggles to comprehend any mathematical concept, a mentor or classroom teacher will spend time with the student to provide guidance and technical assistance in that area. Students who continue to have difficulties in math will be enrolled in an intensive math support course, as well as a grade level math course, to help them close the gap in their knowledge. Small group instruction will be provided two days per week in before and after school tutoring and Study Island sessions to supplement mathematics. On those strands that students need direct instruction for improvement. Math teachers will offer after-school help-sessions for students in the targeted groups. Additional measures may be taken, such as tutorial programs, extended-day services, retention, and modification of curriculum choices, if they are required to meet the students' needs. Teachers will keep a record of attendance in math help-sessions and correlate this to math grade improvement at the end of each nine weeks. After-school tutors and teachers will report to each student's classroom teacher on the student's progress as a result of receiving consistent assistance. The classroom teachers will identify those math strands that are weak for each student in the targeted groups. Assignments will be prepared to remediate weak skills. Teachers will customize the instruction and conduct small focus groups to address specific strands that each group needs.

### **Everyday Mathematics**

Everyday mathematics is a comprehensive pre-k through 6th grade core mathematics curriculum developed by the university of Chicago school mathematics project. It is currently being used in over 185,000 classrooms by almost 3,000,000 students. It is aligned with MAFS. The correlation document can be found at [www.mheonline.com/eminstructionalbridge2012/grades.php](http://www.mheonline.com/eminstructionalbridge2012/grades.php)

#### Curriculum Features

There are a number of features that distinguish the Everyday Mathematics curriculum. These include:

- Real-life Problem Solving

Everyday Mathematics emphasizes the application of mathematics to real world situations. Numbers, skills and mathematical concepts are not presented in isolation, but are linked to situations and contexts that are relevant to everyday lives. The curriculum also provides numerous suggestions for incorporating mathematics into daily classroom routines and other subject areas.

- Balanced Instruction

Each Everyday Mathematics lesson includes time for whole-group instruction as well as small group, partner, or individual activities. These activities balance teacher-directed instruction with opportunities for open-ended, hands-on explorations, long-term projects and on-going practice.

- Multiple Methods for Basic Skills Practice

Everyday Mathematics provides numerous methods for basic skills practice and review. These include written and choral fact drills, mental math routines, practice with fact triangles (flash



cards of fact families), daily sets of review problems called Math Boxes, homework, timed tests and a wide variety of math games.

- Emphasis on Communication

Throughout the Everyday Mathematics curriculum students are encouraged to explain and discuss their mathematical thinking, in their own words. Opportunities to verbalize their thoughts and strategies give children the chance to clarify their thinking and gain insights from others.

- Enhanced Home/School Partnerships

Daily Home Links (Grades K to 3) and Study Links (Grades 4-6) provide opportunities for family members to participate in the students' mathematical learning. Study Links are provided for most lessons in grades 4-6, and all grades include periodic letters to help keep parents informed about their children's experience with Everyday Mathematics

- Appropriate Use of Technology

Everyday Mathematics teaches students how to use technology appropriately. The curriculum includes many activities in which learning is extended and enhanced through the use of calculators. At the same time, all activities intended to reinforce basic computation skills are clearly marked with a "no calculator" sign:

Underlying the EM curriculum are six strands of knowledge: Algebra; Data and Chance; Geometry; Measurement; Numeration and Order; Patterns, Functions, and Sequences; Operations; and Reference Frames. At each grade level, learning targets are identified for each of the six strands. Everyday Mathematics has been the subject of numerous studies, and the data is overwhelmingly positive, and it received the highest rating of any published curriculum reviewed by the Department of Education's What Works Clearinghouse.

## Research

The What Works Clearinghouse (WWC) looked at elementary school math curricula designed to promote math knowledge and skills among elementary school students (average ages 5 to 10 years). Because there is some variation in how elementary school is organized across school districts, this review defined elementary school as a school with any of the grades, K through 5. Curricula included in this review are replicable, materials-based instructional programs that cover one or more of the following content areas: numbers, arithmetic, geometry, pre-algebra, measurement, graphing, and logical reasoning. This review considered only core, comprehensive math curricula. Core math curricula are defined as instructional programs that extend over the course of one semester or more, are central to students' regular school instruction, and are based on any combination of text materials, manipulatives, computer software, videotapes, and other materials. This review focuses on student achievement in mathematics as the key outcome. The findings in this topic report summarize the first wave of WWC elementary school math intervention reports produced in 2006–07. They looked at 340 studies. Of these, 237 were assessments of interventions that qualified for our review; the other 103 could not be categorized by intervention.<sup>3</sup> Of the 237 studies, 9 studies of 5 curricula met our evidence standards, 2 without reservations and 7 with reservations. Altogether, the WWC looked at 73 interventions: 5 had studies that met WWC standards with or without reservations, 67 had studies that did not meet WWC evidence screens, and 1 had a single-case study, which is still under review. (The identification of eligible programs ended in September 2005, and that of eligible studies, in July 2006.) In looking at the one outcome domain for the five elementary school math curricula:

- Everyday Mathematics had potentially positive effects on math achievement.

- Four other curricula had no discernible effects on math achievement.

For more information please visit;

<http://everydaymath.uchicago.edu/about/>

## **Go Math**

- Focused, Coherent, Rigorous

*GO Math* is the first K–8 math program written to fully support new standards. *GO Math* provides teachers with in-depth instructional support, embedded professional development videos and tips, and a wealth of differentiated instruction resources to ensure the depth of instruction required for student success.

- The Next-Generation Solution

*GO Math* at both the elementary and middle school levels combine 21st-century educational technology with modern content, dynamic interactivities, and a variety of instructional videos to engage today’s digital natives. Every student is supported through the universal access features of the program as they learn to think critically and apply their math knowledge. Whether using the innovative Online Student Edition or Write-in Student Edition, students have all the resources they need to succeed.

- Comprehensive Teacher Support

*GO Math* supports teachers through every stage of their instruction, from planning and implementation to assessment and remediation. The Digital Teacher Experience gives teachers access to a full suite of instructional resources—online or offline—on a variety of mobile devices. With HMH Player, teachers can customize content and present interactive lessons to the entire class right from the app.

- A Blended Approach to Instruction

We understand that classrooms and districts across the country are at different stages in the implementation of technology. While our new K–8 program features a strong digital system, it is also perfect for print or blended instruction, whether you are working with elementary- or secondary-level students. In other words, *GO Math* is the perfect program with regards to curriculum and infrastructure. It meets you where you are and takes you where you want to be.

For more information please visit;

<http://www.hmhco.com/shop/education-curriculum/math/elementary-mathematics/go-math-k-8/why>

## Elementary Science

The science program is designed to use a constructive view of learning skills, sequences, and subject knowledge. NSS believes that the curriculum and instructional strategies must first build the student's own reality before introducing new content. Understanding science comes from relating new experiences to what the students already know, not from simply adding new knowledge.

The sequence of instruction will begin with addressing the misconceptions or alternate understandings that the students have about the topic. Then the students will be engaged in activities that help construct or reconstruct meaning. The science curriculum will include strategies to:

- Encourage students to make their ideas explicit and present them with events that challenge their ideas;
- Encourage the process of hypothesizing and generating alternative inspirations of models, enabling the students to explore these alternatives in informal and non-threatening ways, particularly through group discussion, and providing opportunities for students to use their new ideas in a wide ranges of situations so that they can appreciate their utility.

NSS's science-oriented curriculum will concentrate more on an experimental, hands-on approach to the students' current definition of science while increasing their abstract knowledge of science. NSS will implement the proven instructional science curricula, the Science and Technology for Children - STC (Core Curriculum for all students K-5) to reach this goal.

Science is a dynamic, ever-changing discipline, and the students will be encouraged to use computers and the Internet, plan and organize projects, hypothesize, analyze data, and draw conclusions from tests they will create. The major purpose of the science curriculum will be to teach the students to become self-reliant and independent problem-solvers; it is designed to create a high level of interest in learning that will become personalized and individualized.

The Science curriculum will prepare students to achieve the Next Generation Sunshine State Standards by incorporating a hands-on approach to learning of the central science themes: matter and energy, force and motion, earth and space, processes of life, and the scientific method. Teachers will utilize the Next Generation Sunshine State Standards, while incorporating FCAT 2.0 test item specifications from the state of Florida in their daily lesson plans. Additionally, students will participate in hands-on science experiments. In grades 4-8, interested students will be encouraged to participate in competitions such as Science Fair, Science Olympiad, and Science Bowl, where they will be able to explore and investigate the steps to the scientific method.

### **The Science and Technology for Children® (STC®)**

#### General Description

Science and Technology for Children® (STC ®) is a complete science program for children in grades K–6 which was developed by the National Science Resources Center (NSRC), a nonprofit

organization jointly operated by the Smithsonian Institution and the National Academy of Sciences, National Academy of Engineering and Institute of Medicine to address the critical problem presented by the A Nation at Risk report<sup>2</sup>. The program is completely aligned with Florida Standards and Reading Standards for Literacy in Science and Technical Subjects.

Filled with innovative hands-on activities designed to motivate young students, it is the result of a joint effort by some of the leaders in the fields of education and science. Its mission is to improve the learning and teaching of science for all children in the United States and throughout the world.

STC® curriculum offers innovative, comprehensive 24 units for students in grades 1 through 6. It covers four broad topic areas: life, earth, and physical sciences and technological design. The curriculum is flexible with respect to grade level and units also may be used at a level below or above the designated grade level to meet specific needs. The STC curriculum is aligned with Next Generation Sunshine State Standards for Science.

Each STC® unit was written by a teacher-developer working in collaboration with educators, scientists, and evaluators, as well as with science editors and illustrators. All units were field-tested in demographically diverse classrooms throughout the United States<sup>3</sup>. Input from teachers and students who participated in the field tests, as well as recommendations provided by an independent evaluator, were incorporated into the final version of the text.

Each STC® Unit provides a series of lessons that follow a carefully constructed conceptual sequence- one that builds both student understanding and skills using an inquiry approach design around current knowledge about how children learn. Because the science concepts and skills taught in later unit lessons build on those from earlier ones, all STC® lessons are prearranged accordingly and included during unit instruction.

STC® will engage adolescent in inquiry-based science learning and revive the natural curiosity typically found in young children but unfortunately discouraged in traditional elementary school science programs. As they progress through an STC® module, students will take greater responsibility for their own learning, eventually planning and conducting their own experimental procedures, devising their own data tables, and analyzing their own results. Keeping inquiry at the center of the learning process fosters student curiosity and enables students to learn new concepts in a real-world setting.

The primary goals of the STC® program are to:

- Make available a sequence of learning activities that fully address the National Science Education Standards.
- Engage students directly with natural phenomena, the tools of science, real-world problems, and technological design challenges.
- Build on students' prior knowledge and experiences and allow them to apply problem-solving strategies in new contexts.
- Provide opportunities for students to test procedures collect and analyze data, use data to support conclusions, and communicate findings.

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<sup>2</sup> <http://www.ed.gov/pubs/NatAtRisk/index.html>

<sup>3</sup> [http://www.carolina.com/Carolina\\_curriculum/stc/publications.as#Evidence](http://www.carolina.com/Carolina_curriculum/stc/publications.as#Evidence)

- Develop in all students the skills and knowledge necessary to open paths to careers in science and technology.
- Foster positive attitudes toward science.

The NSRC followed a rigorous research and development process to ensure that the STC® modules are scientifically accurate. NSRC curriculum developers worked with master teachers and scientists across the nation to ensure that the learning activities in each module are effective in the classroom and reflect current scientific thinking.

NSRC developer designed special apparatus for many of the activities, testing each piece of equipment to perfect its design while making sure that all STC® activities are safe for elementary school use. After field testing, materials and apparatus were revised even further, based on feedback from students and teachers. NSRC developers have worked closely with Carolina Supply Company to establish exact specifications for each item in every module and to monitor quality control during production.

Lessons within each STC® module also follow a carefully constructed conceptual sequence – one that builds both students understanding and skills using an inquiry approach designed around current knowledge about how children learn. STC® modules follow a planned sequence of conceptual development as shown in the Table below.

<b>Grade</b>	<b>Life and Earth Sciences</b>		<b>Physical Science and Technology</b>	
K-1	Organisms	Weather	Solids and Liquids	Comparing and Measuring
2-3	The Life Cycle of Butterflies Plant Growth and Development	Soils Rocks and Minerals	Changes Chemical Tests	Balancing and Weighing Sound
4-5	Animal Studies Micro worlds Experiments with Plants	Land and Water Ecosystems Measuring Time	Electric Circuits Food Chemistry Magnets and Motors	Motion and Design Floating and Sinking The Technology of Paper

Table: The summary of STC® Modules.

### Results:

A science education program that is judged to be effective typically includes a number of elements (such as exemplary curriculum, professional development, and community support) that work together. The most recognizable indicator of a science education program’s effectiveness, however, is the outcome of the student assessment-student test scores. Educational studies show that student learning increases after the use of STC Program®. Below are some examples of the impact that STC® has made in students’ learning in school districts across the U. S. that have adopted STC® as a science curriculum.

- A study conducted in Michigan showed that students in school districts that used the NSRC’s Science and Technology for Children (STC elementary curriculum) performed better on the Michigan Educational Assessment Program (MEAP) for Science than those who did not. The study compared the results from 15 STC school districts in affluent, moderate, and poor districts (socioeconomic categories aggregated according to the

percentage of students who qualify for free or reduced-price lunch) with the results from districts using a textbook approach to science education. Ten of the 15 STC districts, including two of the low-income districts, improved their scores of the MEAP at a greater rate than the state average.<sup>4</sup>

- During its eight-year partnership with the NSRC, Washington State Department of Education has increased the number of school districts implementing research-based science education programs from a few pilot districts to districts that serve 75% of the state's student population. Statewide data show significant improvement in student learning in schools that have fully implemented the NSRC reform model such as STC®, with a strong emphasis on teacher professional development.<sup>5</sup>
- The science reform effort in this economically deprived rural community shows that an investment in science education provides an excellent return in other areas of the curriculum as well. The Valle Imperial Project in Science (VIPS) is a NSF funded Local Systemic Initiative serving approximately 22,500 K-6 students and 1100 teachers in 14 school districts in Imperial County, California. Imperial County ranks highest in poverty of all 58 California counties with 66% of students receiving free/reduced lunches, and 47% of the students are English language learners. The El Centro Elementary School District implemented a reform effort following the NSRC model, including research-based instructional materials such as STC®. Students in Imperial Valley public schools who have been taught using inquiry methods significantly outperform their classmates who have had traditional (textbook-based) science instruction. Stanford Achievement Test results indicate that the longer students are enrolled in research-based science programs, the better they perform on nationally normed science, writing, and mathematics tests.<sup>6</sup>

### **Elementary Social Studies**

This curriculum will promote the students' understanding of historical, geographical, and civic knowledge and their application of this knowledge to today's diverse world culture. The School will use the state-approved My World or other state-adopted text in the instruction of Social Studies. The Social Studies curriculum includes the study of related knowledge and modes of inquiry selected from history, the humanities, and the social sciences, including anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology. In K-2, history is delivered to students with stories and discussions through folk tales, legends, and prior knowledge brought to the classroom by the student. Stories of different cultures and countries to compare to their personal stories and experiences are presented. Students also create an understanding of community through the classroom rules, values, and decisions that affect individuals and the classroom community as a whole. In grades, 3-5, the curriculum focuses on the history of the United States, Florida History, and World History. This gives an opportunity for students to explore community and civic responsibility as they study historical events and research their effect on present day society through projects, research, technology and community service. The program will prepare students to have an

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4 <http://www.carolina.com/stc/publications/evidence/michigan.pdf>

5 [http://www.carolina.com/carolina\\_curriculum/stc/acrobat/westvalley\\_brief.pdf](http://www.carolina.com/carolina_curriculum/stc/acrobat/westvalley_brief.pdf)

6 <http://www.carolina.com/stc/publications/evidence/vips.pdf>

understanding of multiple cultures, tolerance, and respect for the world beyond our borders and therefore becoming more global citizens. The social studies program will provide each student with a broad background in the social sciences. Within each class, the faculty-student exchange will be strongly encouraged. Students will be encouraged to think critically and to form opinions consistent with the facts of history. From the earliest events of recorded history, through the development of family life, culture and the arts, to the development of governments and countries driven by geographical exploration, the wars of history and the stories they tell, from yesterday to today, these students will have the unique opportunity to pursue their curiosity and respond to the Florida Standards by participating in the discovery of man and his contributions to the whole of humanity.

## **MIDDLE SCHOOL CURRICULUM**

### **Middle School English Language Arts**

The goal of the New Florida Standards aligned ELA middle school curriculum is to increase rigor in core and intervention instruction and improve student proficiency on grade level outcomes & graduate all students ready for high school and college & career in the long run. In return, students will be able to build knowledge through content-rich text, to use evidence in reading, writing & speaking, and to practice complex text and academic language.

The primary focus of the language art program will help students use the reading process effectively, select and use pre-reading strategies that are appropriate to the text, such as discussion, making predictions, brainstorming, generating questions, and previewing (to anticipate content, purpose, and organization of a reading selection). In addition, the students will use writing processes effectively, select and use appropriate prewriting strategies, such as brainstorming, graphic organizers, and outlines. Briefly, the students will be prepared to use viewing and speaking, strategies effectively and understand the nature and power of language.

The School will use the New Florida Standards aligned Holt McDougal Series (or other state-adopted text) as English Language Arts program. The program helps students develop the essential skills of reading carefully, thinking critically, listening intently, and speaking and writing persuasively. Students are an integral part of the reading process. Instruction is aligned to mastery of the New Florida Standards and employs before, during, and after reading strategies. Students use Socratic questioning techniques to increase critical thinking and develop skills in formulating their own questions to guide their inquiry.

The purpose is to provide educational experiences which develop English language arts concepts and skills. The content will include, but not be limited to the study of literature, Literacy in Science & Technical Subjects, Literacy in History & Social Studies, the use of the writing process, and the application of reading, listening, speaking, critical thinking and study skills. Information on how language arts skills apply to daily life and work will also be provided. The purpose of this course is to develop the ability to use, interpret, and appreciate spoken and written English.

All students at all levels need rich experiences with good literature. An ideal program moves beyond strict adherence to a set of materials, and is centered on themes appropriate to given groups of students. Literature will include multicultural selections of traditional classical and modern works. A quality literature program includes biographies, essays, and other nonfiction, as well as poetry, drama, stories, and novels.

Reading/Literature and Writing will be taught across the curriculum. Students will perform plays, sing songs and play music, read novels as related to the theme for the quarter and demonstrate comprehension and understanding through book reports, oral presentation, etc. Multicultural activities such as cultural demonstrations, speakers with international experiences, dressing in costumes correlating to the culture, etc. will be implemented.

Students will read and analyze increasingly challenging and complex works of poetry and prose, representing a wide range of styles and genre. Students will acquire the ability to read critically, to identify stylistic and rhetorical devices of poetry and prose, and will develop understanding of the relationship between literary form and content.

They will receive intensive training in English composition, including conventions of syntax and punctuation, and they will demonstrate competence in written assignments. Students will practice expository writing, with strong emphasis on proper sentence and paragraph and essay organization; they will also learn to prepare memos, business letters, and newspaper reports. The writing of research papers-that is, essays that discuss and rely extensively on sources-will be required throughout the curriculum; students will learn how to identify appropriate sources, form a bibliography, organize the paper and acknowledge sources properly.

They will also have the opportunity to develop the techniques of creative writing and the composition of poetry in forms commonly found in English-language verse (such as ballad, blank verse, sonnet, free verse, heroic couplets).

The School will follow the State course descriptions for the following courses to be offered in grades 6-8;

GRADE	COURSE
6	M/J Language Arts I
6	M/J Language Arts I Advanced
7	M/J Language Arts II
7	M/J Language Arts II Advanced
8	M/J Language Arts III
8	M/J Language Arts III Advanced
6-8	M/J Intensive Reading*

*\* Students scoring at Levels 1 and 2 on the most recent administration of FCAT Reading for the first year and equivalent scores in new State Assessment for the following years are to be enrolled in M/J Intensive Reading in addition to their required M/J Language Arts course in grades 6, 7, and 8. A daily double literacy block for all Level 1 reading students and Level 2 students who have reading deficiencies in decoding and fluency will be instituted.*



## Middle School Mathematics

Math Curriculum incorporates Mathematics Florida Standards (MAFS). The incorporation of MAFS has necessitated an instructional shift that would require Focus, Coherence and Rigor. By focusing strongly where the standards focus, teachers will significantly narrow the scope of content, deepen how time and energy is spent in the math classroom and focus deeply only on what is emphasized in the standards, so that students gain strong foundations. The coherent math curriculum will require teachers to think across grades and link to major topics within grades. They will carefully connect the teaching within and across grades so that students can build new understanding onto foundations built in previous years. They will also begin to count on solid conceptual understanding of core content and build on it since each standard is not a new event, but an extension of previous learning. Students will experience rigorous learning experience where intensity will be equal in solid conceptual understanding, procedural skill/fluency, and application of skills in problem solving situations.

Teachers will

- teach more than “how to get the answer” and instead support students’ ability to access concepts from a number of perspectives
- educate students to see math as more than a set of mnemonics or discrete procedures
- support fluency and application by focusing on conceptual understanding
- structure class time and/or homework time for students to practice core functions such as single-digit multiplication so that they are more able to understand and manipulate more complex concepts and have students gain speed and accuracy in calculation
- teach students how to use appropriate concepts and procedures for application even when not prompted to do so
- provide opportunities at all grade levels for students to apply math concepts in “real world” situations, recognizing this means different things in 6-8 and HS

The mathematics curriculum will be integrated throughout the entire NSS curriculum to the greatest extent possible. Teachers in content areas outside of math, particularly science, ensure that students are using grade-level-appropriate math to make meaning of and access science content.

The incorporation of the New Florida Standards will help develop Mathematical Expertise through the standards for Mathematical practices that are listed below:

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning

Students will have considerable experience in making data, tables, graphs, and geometric sketches and using them, along with symbols and clear English, to describe a wide variety of patterns and relationships. Students will examine the limitations of mathematical models in describing and predicting events in real world. They will be encouraged to state their own criteria for what is a satisfactory result to discuss their judgments in terms of their purpose.

Students will be able to understand the mathematical significance of the operations while they will be able to perform arithmetic operations. By focusing on the 'why' behind the algorithmic procedures, we are preparing students for further study of mathematics as well as the quantitative literacy of daily life. The mathematics curriculum is integrated throughout the curriculum as much as possible.

Accepted as a philosophy that "all children can learn," The School will not jump students into large groups, but will instead provide individualized tutoring, small group work and extra practices for those students who need more time to master complex concepts. According to the National Council of Mathematics Teachers, a shift is needed from traditional 'paper and pencil' approaches which emphasize computation and rote learning to an approach which emphasizes the child gaining mathematical insight, reasoning, and problem solving skills. The School will focus on creating a developmentally appropriate math curriculum where children are encouraged to understand the conceptual bases and quantitative analysis of mathematical relations. The School believes that the logical thought processes of mathematics are necessary to the development of critical thinking. Through exposure to the basic courses, students not only attain the computational skills needed for everyday life but also develop their ability to think clearly and to present their thoughts in a precise, well-organized fashion. The program will be flexible in that it satisfies the needs of students who are not particularly mathematically oriented, while providing the challenge and interest necessary for those who want a sound mathematical background on which to base further study.

The Mathematics curriculum will be aligned with New Florida Standards. In order to implement mathematics curriculum, The School is committed to adopt the proven instructional mathematics curriculum, the College Preparatory Mathematics – CPM (core curriculum for all students) and Pearson Pacemaker Basic Mathematics (supplemental math curriculum for support level students).

The School will follow the state course descriptions for the following courses to be offered in grades 6-8. The purposes of these courses are to provide instruction and promote academic excellence in basic mathematic skills, geometry, algebra, problem solving, and mathematical reasoning. The content will include, but not be limited to operations, numeration, whole numbers, fractions, decimals, percent, ratio and proportion, equations, inequalities, functions, expressions, properties, constructions, area, volume, proofs, limits derivatives, integrals and the development of logical reasoning skills. These skills and in preparation for the State Assessment, are essential for a student to succeed within the real world work environment. These courses cover concepts and materials that are aligned to the New Florida Standards.

GRADE	COURSE
6	M/J Mathematics I*
6	M/J Mathematics I Advanced
6-8	M/J Intensive Mathematics
7	M/J Mathematics II*
7	M/J Mathematics II Advanced
8	M/J Mathematics III (Pre-Algebra)
8	Algebra I
8	Geometry

\*Students requiring further strengthening in mathematics will be enrolled in M/J Intensive Mathematics.

### **College Preparatory Mathematics (CPM)**

College Preparatory Mathematics (CPM) is offering series of textbooks to meet the grade 6-8 and high school MAFS content and practice standards: Core Connections, Courses 1 - 3 and Core Connections Algebra 1 & 2 and Geometry. The complete correlation of the standards can be found at <http://www.cpm.org/teacher.html>. CPM is a complete, balanced mathematics program for middle school and high school students who want to learn the basics and more. The U. S. Department of Education designed CPM "an exemplary program" in October, 1999. CPM includes a two-year middle school curriculum and a high school program of Algebra 1, Geometry, Algebra 2, Math Analysis (Pre-Calculus), and Calculus accepted by every college and university in the country. CPM students are prepared to know fundamental skills and procedures, understand concepts, and acquire an array of problem solving strategies so that they will be prepared to be successful in college mathematics courses and the workplace of the 21st century. In line with the requests of leaders of high-tech industries, CPM students learn to work together in study teams on challenging problems. Under the careful guidance of their teachers, CPM students explore the major concepts of middle school and high school mathematics in a variety of ways designed to provide them with several means to solve math problems. CPM students are assisted in making the transition to higher mathematics by doing problems which illuminate concepts in four major ways: numerically, symbolically, graphically, and verbally. Deep ideas are spread over weeks or months as students engage and re-engage the same concepts in a wide variety of contexts and degrees of difficulty with frequent opportunities to cement their understanding of basic ideas and their intellectual connections.

As a result of the carefully designed problem sequence of the books, CPM students score at least as well but usually somewhat better (and often substantially better) on standard multiple choice exams than students in traditional classes. On written response questions, CPM students score 30-40% higher. Transcript studies indicate that very high ability CPM students who take Algebra 1 in the 8th grade are 60% more likely to enroll in calculus classes in high school than students in traditional classes at the same school. At the same time, average students are significantly more likely to persist in mathematics than students in traditional classes. A report that compares the CST results for about 100 CPM high schools in California to the state average on the Algebra 1, Geometry, and Algebra 2 CST exams shows CPM schools scored equal to or higher than the state average for "proficient and above" or better students in 63 of the 71 comparisons (2010). Another report that compares the CST results for about 50 identified CPM middle schools in

California to the state average on the 6th and 7th grade tests shows that for all five years and in both grades, the CPM schools have a greater percentage of students performing at the proficient or better level. The 6th grade results average 13.2% higher for the five years, while the 7th grade results average 24.6% higher (2008).

The goal of CPM Educational Program is simple: improve the effectiveness of secondary mathematics instruction by incorporating contemporary knowledge about how people learn into student texts and teacher methodology. CPM is built on the fundamentals of the existing mathematics curriculum and incorporates the mathematics necessary for success in the 21st century. CPM has helped more than 4,000,000 students make sense of mathematics and see both the power and the beauty of the subject.

### *What Is The CPM Curriculum?*

The CPM middle school and high school core courses—Making Connections: Foundations for Algebra, Courses 1 & 2, Algebra Connections, Geometry Connections, and Algebra 2 Connections—were designed and written based on several fundamental learning principles. An outline of those principles (in bold) and their implications in the course design are described below.

Mathematics is a coherent intellectual system, not a collection of disjoint facts, and needs to be taught in a way that makes this coherence clear. The Connections courses emphasize the connected nature of mathematics. Each course consistently weaves strands of topics together so that the connections emerge naturally and can facilitate deeper understanding.

Curriculum works best when it is successful with all students, including “traditionally struggling students” and “accelerated” students. Therefore, the Connections series makes each course challenging and engaging for all students from the very beginning. This approach not only builds stronger study teams (because in order to promote mathematical discourse among the students, study teams need something to talk about), but also helps to reduce status issues from the start (e.g., “Jimmy can do these problems quickly on his own so he must be smart and I am not.”). Through the use of challenging problems, accelerated students are pushed to learn more and are not lost to boredom, while “traditionally struggling students” are actively engaged in the work of developing solution plans and executing them. They become an integral part of the study team. At the same time, to support students with weaker skills and learning gaps, these courses build the conceptual foundation slowly with an emphasis on manipulatives and looking at problems in multiple ways. The “mastery over time” approach helps “traditionally struggling students” build understanding over time and accommodates different learning styles.

Teachers teach better when curriculum materials are flexible. The Connections authors have specifically designed many of the guided investigations so that teachers can choose an open-ended approach or select the “further guidance” problems for their students. Chapter closure is designed to offer choices for teachers depending on their students’ needs and the time available to them for closure.

Structured investigations and lessons are more successful when students clearly understand what they are looking for. Each lesson in the Connections courses begins with an introduction that lays out the learning goals. In addition, lessons are written so that students understand the purpose and goals of the task to enable them to sharpen their focus. Attention is also paid to helping students recognize the framework of what they are learning, such as using a representation web. Students learn more when they solve problems and discuss their thinking with others. This research-based principle is incorporated into the design of the CPM Connections curriculum by having students collaborate in study teams. The teacher manages and supports learning while guiding students toward the mathematical objectives of the lessons.

Teams work better when the work actually requires a team and there is something to talk about. The Connections courses are specifically designed to have class work that is challenging for all students so that students must problem-solve together. Each student has a specific, defined role in the solution process. These specific responsibilities eliminate the potentially damaging team behavior of having one student solve the class work problems and then “teach” or “tell” the other students in the team how to solve them.

Closure is a vital portion of a lesson. Closure is incorporated into each lesson. Sometimes the closure activity consists of reflective writing while other times the Teacher Editions offer suggested questions the teacher can use to facilitate a whole-class discussion.

A student’s learning is more meaningful and is better retained when he or she reaches the level of understanding necessary to explain and justify his or her thinking. The Connections courses emphasize asking students to justify their mathematical thinking and problem-solving approaches to help foster long-term retention of what they learn.

A mathematical text should have usable reference elements. The text design allows teachers, parents, and students to access information through indices, glossaries, and by referring to problems in a manner that helps everyone find the problem or lesson. All major concepts are eventually consolidated in Math Notes boxes, which include definitions of key mathematical terms, as well as examples for how to solve certain types of problems. Every lesson is structured similarly (introduction, problems/investigations, closure, Math Notes box (when appropriate), and homework) so that students know where to look for what they need.

Literacy can be strengthened through meaningful/rigorous mathematical study. The Connections series supports students’ growth in reading and writing literacy. The student text is written in an even voice with consistent language usage to help students who are challenged with reading. Students are also given regular opportunities to develop and practice their writing skills through reflections and explaining their understanding. The bulk of the reading is done during class time when students have the support of their team members and the teacher. Homework assignments require much less reading. The Lexile scores for the books support the readability of the texts for their intended grade levels.

The structure of the lessons and layout of the textbook help students focus on mathematics and eliminate distractions. The consistent structure of each lesson, homework set (“Review and Preview”), and chapter closure section help to make students comfortable and confident with the

lessons. The use of one color printing with illustrations specific to the problems (or that are a course icon) avoid the distractions of random pictures, multiple color splashes, and layers of highlighting. These techniques divert the students' focus from the mathematics in the lesson and create more confusion than clarity. The "color" in the book is the excitement and engagement of the students with mathematics.

### Program Quality:

Reviewers noted that College Preparatory Mathematics' learning goals are aligned with New Florida Standards. The program is rigorous, focused, and coherent and provides familiarity and practice with numerous mathematical concepts (e.g., algebraic notation, algorithms, and geometric representations in Mathematics 1). The reviewers found that the overall program goals are well aligned, challenging, clear, and appropriate for the intended student population (lower level ability to advanced students). Each of the four courses is built on a few core ideas that are developed and deepened over a four-year period, thereby allowing students more time to master a concept.

The program strategies emphasize active learning and group work; students are introduced to problem solving, communication, and reasoning through laboratory experiments and real-world applications. Support materials are provided in the student texts to help them review and evaluate their progress. The reviewers noted ample evidence for the application of skills through problems that engage the students in both individual and collaborative work and address a variety of learning styles. Concepts are developed through guided instruction, individual and team-work, tactile and kinesthetic activities, data collection, class-work, and homework. Students are encouraged to develop a positive attitude and become more aware of their own thinking about problems and to describe their efforts both orally and in writing.

An assessment handbook is provided in the teacher editions and outlines a variety of options for integrating assessment into instruction, e.g., investigations, portfolios, projects, presentations, problem solving, and daily performance assessment. The wide variety of approaches presented in the teacher's program materials includes methods for assessing depth, flexibility, and application of learning. The student self-assessment component was viewed by the reviewers as a strong component of the assessment handbook.

### Program Effectiveness and Success:

College Preparatory Mathematics has been designated as an **Exemplary** mathematics program. CPM has shown consistent evidence of improved student performance in a variety of studies that employ comparison groups and large sample sizes. Nine separate studies examined the achievement of approximately 30,000 California students in diverse settings. A variety of instruments was used to assess growth in mathematics achievement, including multiple choice assessments from the Math Diagnostic Testing Program (a well-established program that produces multiple-choice examinations for use by California high schools to provide diagnostic data and by colleges as placement tests), open-ended written response items which were processed by the University of California at Davis, the SAT mathematics exams, and

California's Golden State Examination (a test to assess students in many disciplines for high achievement). In three studies that asked students to provide written responses to open-ended questions assessing their inquiry, reasoning, and problem-solving skills, evidence consistently favored CPM students of both genders and all ethnicities over non-CPM students. Several studies examined possible differences in achievement produced by CPM for both genders, students of various ethnic groups, and students at different places on the performance spectrum. Results demonstrated that CPM works equally well for students of all characteristics.

### Usefulness to Others:

Reviewers noted that the program is well developed with a solid curriculum and supportive teacher training component. The program has been used in both accelerated and regular classes from Grade 7 to early college, in block scheduling structures, and in a variety of geographic and multi-ethnic locations that include non-native English speakers, and students with learning disabilities.

### Educational Significance:

The CPM program is consistent with the New Florida Standards that suggests real-life problems be used to show students that the mathematical concepts they are learning will be used after they leave the classroom. Each unit in CPM is based on real-life themes and built around appropriate mathematical concepts.

The CPM curriculum was originally a grant-funded curriculum and assessment development project located in Sacramento County, California. When the first edition of Algebra 1 was released in 1992, there were about 200 teachers using CPM materials, mostly in seven urban sites in California. By the 1995-96 school year there were more than 2,000 teachers using CPM materials, mostly in California, with about 100 teachers located in Washington State, Wisconsin, Illinois, Pennsylvania, and Washington, D.C. *Today CPM is used in more than 35 states.*

The CPM program presents mathematical ideas in contexts that help students make sense of otherwise abstract principles. Students are taught how to gather and organize information about problems, break problems into smaller parts, and look for patterns that lead to solutions. Each course is built around several core ideas that are used to develop related topics, skills and procedures. Students master skills and come to understand ideas over several days and weeks. Much of their classroom time is spent doing guided investigations—much like a math lab—that develop ideas in concrete, visual ways. They also apply their learning to realistic problems that require more than merely mimicking examples of rules.

### What Makes the CPM Curriculum Effective?

- The CPM curriculum is effective because of its unique emphasis of both basic skills and problem solving strategies. Where other mathematics programs emphasize only the mechanics of mathematics, the CPM materials develop the basics while encouraging students to understand ideas, see relationships between them, and apply mathematical principles to complex problems.
- CPM courses prepare students for the global marketplace they will face after graduation, either in institutions of higher learning or in the job market.

### *When Were The CPM Materials Tested?*

- Each CPM high school course was piloted for three years by at least 50 teachers with 30,000 students. The preliminary edition of the middle school program was used by 40,000 students in 2000-01. By the end of CPM's first decade, more than 2,500,000 students had taken a CPM math class.
- During the high school piloting period, CPM conducted studies comparing CPM and non-CPM student performance on traditional multiple choice exams and end-of-the-year word problems requiring a written response. These studies involved more than 30,000 students.
- All of the comparative research to date between students using other textbooks and students using CPM has shown that CPM students do somewhat better (and in some studies, much better) on multiple-choice tests and significantly better on challenging word problems. CPM teachers report that more of their students continue with the next year of college preparatory mathematics (e.g., Algebra 1 students enroll in Geometry) than before they adopted it. Schools that had low enrollment in Mathematical Analysis and few, if any, AP calculus students now have fully enrolled sections of these courses. CPM students earn significantly more awards on the California Golden State Examination than students in past years and students in the same school using traditional textbooks.

For more detail see <http://www.cpm.org>

### **Pearson Pacemaker Basic Math**

Pacemaker Basic Math is a comprehensive program that provides a solid, well-balanced approach to teaching math content and building math skills in whole numbers, basic arithmetic operations, and mastery of simple geometry and algebra as it prepares students for the rigors of difficult standards and proficiency tests.

This program provides educators with tools to meet the needs of diverse classrooms, keep learning up-to-date and relevant, and create supportive learning environments for a range of learning styles. Correlated to the New Florida Standards, the materials and techniques used in the program are accessible, predictable, age-appropriate, and relevant as it bridges the gap between varied abilities of students and the ladder to success in algebra.

Visual learners and struggling readers are supported with photographs, charts, graphs, and illustrations, and high-interest projects gear up students for lessons.

Pacemaker Basic Mathematics Encourages students to progress at a pace that works for them through a manageable and consistent format, Reinforces student comprehension with frequent opportunities to assess student understanding, Equips students with the essential skills they need to master word problems through unique problem solving lessons and Fosters student success through single-concept lessons and stepped-out examples.



This comprehensive program provides a solid, well-balanced approach to teaching math content and building and mastering math skills in number sense, measurement, as well as introductory operations and data analysis, as it prepares students for the rigors of difficult standards and proficiency tests.

Pacemaker Basic Mathematics bridges the gap between success in algebra and the varied abilities of students. It incorporates valuable materials and techniques for educators and students, ensuring accessibility of content, relevance, and age-appropriateness.

### **Middle School Science**

The science program is designed to use a constructive view of learning skills, sequences, and science knowledge. It is believed that we must build the student's own reality when introducing content. Meaning in science effective teaching comes from relating the new experiences to what they already know, not from simply adding new knowledge to what students know. The Science Curriculum will incorporate Reading Standards for Literacy in Science and Technical Subjects.

The sequence of instruction necessarily begins with misconceptions or alternate understandings that the students have about the topic. Thus, it engages students in activities that help construct or reconstruct meaning. Science class strategies include:

- Encouraging students to make their ideas explicit, presenting them with events that challenge their ideas;
- Encouraging the process of hypothesizing, and the generation of alternative inspirations of models, enabling the students to explore these alternatives in informal and friendly ways, particularly through group discussion, and providing opportunities for students to use their new ideas in wide range of situations so that they can appreciate their utility.

The School's science-oriented curriculum will concentrate more on an experimental, hands-on approach to their current definition of science while increasing the abstract knowledge of science. Science is a dynamic ever-changing discipline; thus student will be encouraged to use computers and the Internet, plan and organize projects, hypothesize, analyze data, and draw conclusions from tests they will create. The major purpose of the science curriculum is to teach children to become self-reliant, independent problem-solvers, concentrated in science subjects, which are merged with life in a consistent manner with what is known about how adolescents think of them. It is designed to create a high level of interest in learning that will become personalized and individualized. The School believes as a philosophy that science empowers students to understand our world and how it works. Science, therefore, is the key that opens the doors that help students discover their own unique and important gifts.

The School will implement Glencoe Integrated Science series or another State adopted curriculum in addition to STC explained above in Elementary Science section. The Science curriculum will prepare students to achieve the NG Sunshine State Standards by incorporating a hands-on approach to learning of the central science themes: matter and energy, force and motion, earth and space, processes of life, and the scientific method.

The purpose of the science courses offered is to provide students with a broad knowledge of scientific concepts. All of the science courses are designed to promote a sense of inquiry through laboratory experiences and to develop critical thinking skills. The School will follow the state course descriptions for the following courses to be offered in grades 6-8.

GRADE	COURSE
6	M/J Comprehensive Science I
6	M/J Comprehensive Science I Advanced
7	M/J Comprehensive Science II
7	M/J Comprehensive Science II Advanced
8	M/J Comprehensive Science III
8	M/J Comprehensive Science III Advanced
8	Earth Space Science
8	Biology I

### **Middle School Social Studies**

The School will use the state-approved McDougal Littell, Holt, Rinehart & Winston, Prentice-Hall Series or other state-adopted text in the instruction of Social Studies. The Social Studies curriculum includes the study of related knowledge and modes of inquiry selected from history, the humanities, and the social sciences, including anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology. Thematic units have been designed that integrate the various subjects and address key areas of social studies in alignment with Social Studies Standards and Reading Standards for Literacy in History/Social Studies. Character Education components (respect, honesty, responsibility, self-control, tolerance, kindness, citizenship and cooperation) will be emphasized individually through thematic lessons and group projects.

Social Studies education will promote loyalty and love of country and community, and it will prepare students to participate intelligently in public affairs. Its component disciplines foster in students the knowledge and skills needed to understand current political and social issues. Social studies education will provide students with an understanding of the democratic principles and ideals upon which good citizenship is founded and an understanding of the world beyond their borders.

The School will follow the state course descriptions for the following courses to be offered in grades 6-8. These courses cover concepts and materials that are aligned to Social Studies Standards. Students will be required to successfully complete three credits of Social Studies at the Middle School level in Global Geography, Civics, and U.S. History which will be offered through the school at the Regular, Advanced and Gifted Levels within the Middle School.

GRADE	COURSE
6	M/J World Geography, M/J World Geography Advanced
7	M/J Civics, M/J Civics Advanced
8	M/J US History and Career Planning, M/J US History and Career Planning ADV

Lessons will be designed to teach students to effectively analyze historical evidence, use sources effectively, detect potential bias in resources due to cultural influences, and argue empathetically.

Thematic units will be designed that integrate the various subjects: Time, Continuity, and Change (History); People, Places, and Environments (Geography); Government and the Citizen (Civics and Government); additionally, the School will include the following Social Studies topics in the Social Studies curriculum:

- African-American History Requirement
- Holocaust Requirement
- Hispanic Contributions to the United States Requirement
- Women’s Contributions to the United States Requirement
- Veterans Contributions Recognition
- “Celebrate Freedom Week” Instruction - shall be in accordance with Florida Statutes and district guidelines.
- Character Education - Instruction in the nine core character education values (The nine core values are citizenship, cooperation, fairness, honesty, integrity, kindness, pursuit of excellence, respect, and responsibility).

Students are required to enroll in a semester-long course in career and education planning to be completed in the seventh or eighth grade. As part of the course students will develop a career and education plan using Florida CHOICES Explorer. The School will use approved yearlong Social Studies courses to meet this requirement, such as M/J United States History & Career Planning. The classroom teacher will determine which semester to implement the career and education content.