Elementary Language Arts

The goal of the CCSS 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 the state-approved Macmillan/McGraw-Hill Treasures series as the Elementary Comprehensive Core Reading and 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 Reading and Language Arts CCSS and addresses the five areas of reading: phonological awareness, phonics, fluency, vocabulary, and comprehension. 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 Macmillan/McGraw-Hill Treasures and Imagine It. The School will utilize computer assisted intervention programs such as Success Maker, Study Island, and Focus Florida.

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.

The Response to Intervention (RtI) model will guide the School with implementing a tiered approach to instructional delivery that includes fidelity of instruction using the core program and interventions of increasingly higher intensity, based on the differentiated needs of students. This multi-tiered approach to providing services and interventions to students at increasing levels of intensity is based on progress monitoring and data analysis. Problem solving at all tier levels is a
cyclical process that involves analyzing the data to identify the problem and determine why the problem is occurring, implementing an instructional plan to target specific differentiated student needs, and evaluating the plan to ensure effective response to the intervention.

As part of Tier I 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 Macmillan/McGraw-Hill Treasures-Imagine It Comprehensive Core Reading Program (CCRP).

Macmillan/McGraw-Hill Treasures and Imagine It programs are an explicit, systematic, and 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 the Macmillian/McGraw-Hill Treasures and Imagine It 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 (Perfetti, Beck, Bell, & Hughes, 1987; Wagner, et al., 1997).

Phonics
Phonics instruction focuses on the acquisition of letter-sound correspondences and their use in reading and spelling. In both the Macmillian/McGraw-Hill Treasures and Imagine It 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. Trophies and Treasures provide phonics instruction based on scientific research showing that systematic, explicit phonics instruction is a valuable and essential part of a successful reading program (Chall, 1996; Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998).

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 the MacMillian/McGraw-Hill Treasures and
Imagine It programs, along with daily opportunities for teachers to model fluent reading through read aloud, demonstrations, shared reading, and modeled strategies. The programs also include lessons on reader’s theatre, choral reading, echo reading, books on tape, and repeated readings, all strategies shown to improve reading fluency.

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 the Macmillian/McGraw-Hill Treasures and Imagine It Programs 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 scaffolded teacher support with leveled text during small group instruction and independent reading.

Supplemental resources can 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 Read XL, Jamestown Reading Navigator as its reading program to meet student learning needs in specific areas. The School will also use FAIR and PMRN resources, DAR and Accelerated Reader (AR) as supplement programs to meet student-learning needs in specific areas. Details of these programs will be provided in the School’s Reading curriculum section below. Details of these programs will be provide in the Section 4, 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. Students will learn basic keyboard skills and program operations for word processing in the preparation of assignments, including the preparation of charts and tables.

The elementary reading and writing curriculum will serve as a framework in which students encounter the works of great authors of the past and present. The curriculum will include, but not be limited to, Greek and Roman mythology, fables and stories from both Western and non-Western cultures, and stories illustrative of the history of the United States. The school will use reading materials not only to develop decoding and interpretive skills but also to begin students' encounters with great and enduring writings that will form a basis for advanced literary study and will address issues of character, virtue, and citizenship. Some examples of Standards are presented in Appendix F.

**Elementary Mathematics**

The incorporation of CCSS 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 school 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 CCSS 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,” BMSS will not track 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.

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, BMSS 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. BMSS will focus on creating a developmentally appropriate math curriculum where children are encouraged to understand the conceptual bases and quantitative analysis of mathematical relations. BMSS 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 BMSS 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, BMSS will adopt the proven instructional mathematics curricula, Everyday Mathematics and Project M3: Mentoring Mathematical Minds that will be discussed in detail later on.

In addition to Everyday Mathematics and Project M3: Mentoring Mathematical Minds, 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)\(^2\). 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 [National Council of Teachers of Mathematics (NCTM), 2000]\(^3\). 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. BMSS 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, BMSS 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.

BMSS 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, BMSS will have scheduled workshops every semester to discuss mathematical tasks and the best ways to teach them to the students. Moreover, RCSA-ES 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 may be provided two days per week on those strands that students need direct instruction for improvement. Math teachers may 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 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.

**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. We looked at 340 studies. Of these, 237 were assessments of interventions that qualified for our review; the other 103 could not be categorized by
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/

**Project M3: Mentoring Mathematical Minds**

Project M3 is a research-based mathematics program for gifted and talented students in grades 3, 4, and 5. Development of this program was funded by the U.S. Department of Education's Jacob K. Javits Program. Project M3, Mentoring Mathematical Minds, is a 5-year collaborative research effort of faculty at the University of Connecticut, Northern Kentucky University, and Boston University and teachers, administrators, and students in 10 schools of varying socioeconomic levels in Connecticut and Kentucky. Project M3 was researched under the direction of the Neag School of Education at the University of Connecticut.

Rather than focusing on computation, as many mathematics curricula do, Project M3 units focus on increasing the depth and complexity of the mathematics in which talented students are engaged. In other words, these young mathematicians are engaged in conceptual understanding rather than the application of rote formulas. This is achieved through an emphasis on mathematical discourse, both written and verbal, within the classroom and on problem solving and the spirit of inquiry. The units combine this increase in depth and complexity, emphasis on mathematical discourse, and focus on problem solving and inquiry with the NCTM Content and Process Standards and with best practices in the field of gifted and talented curriculum development to create the type of mathematics that is both truly challenging and enjoyable for mathematically talented students.

The goals of the program include the following.
- Creating challenging and motivational curriculum units for students;
- Providing ongoing professional development for teachers;
- Increasing math achievement and attitudes toward math in talented and diverse students;
- Narrowing the gap in math achievement for students with talent potential from economically disadvantaged backgrounds, those with limited English proficiency, and minorities.

**Award Winner:**
Project M3 has won awards from the curriculum studies division of the National Association for Gifted Children (NAGC) for three consecutive years. The Level 4 unit At the Mall with Algebra: Working with Equations and Variables is the winner of the NAGC Curriculum Studies Award.

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4 http://www.projectm3.org/
5 http://www.gifted.uconn.edu
2006 Award, and was judged to be an exemplary model of curriculum for high-ability learners. The two previous units winning this award are Unraveling the Mystery of the MoLi Stone, the winner of the NAGC Curriculum Studies 2005 Award, and What's the ME in Measurement All About?, the winner of the NAGC Curriculum Studies 2004 Award.

**Curriculum Units:**

Project M3 has created a total of 12 curriculum units of advanced mathematics accompanied by professional development as well as one differentiated unit for students of all ability levels. In each unit of the Project M3 series, students explore an interesting simulated or real-life problem connected to their world and use their Mathematician’s Journals to think, write, and act like mathematicians to solve the problem.

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<th>Level 3</th>
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<tr>
<td><strong>Number and Operations</strong></td>
<td>Unraveling the mystery of the MoLi Stone: Place value and Numeration.</td>
<td>Factors, multiples, and leftovers: Linking multiplication and Division.</td>
<td>Treasures from Attic: Exploring Fractions</td>
</tr>
<tr>
<td><strong>Algebra</strong></td>
<td>Awesome Algebra: Looking for Patterns and Generalizations.</td>
<td>At the mall with Algebra. Working with variables and Equations.</td>
<td>Record makers and breakers: Using Algebra to Analyze Change.</td>
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<tr>
<td><strong>Data Analysis and Probability</strong></td>
<td>Digging for Data: The Search within Research.</td>
<td>Analyze this!: Representing and Interpreting Data.</td>
<td>What are your chances? Exploration of Probability.</td>
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The curriculum design follows the tenets of The Multiple Menu Model: A Practical Guide for Developing Differentiated Curriculum (Renzulli, Leppien, & Hays, 2000) and The Parallel Curriculum, A Design to Develop High Potential and Challenge High-Ability Learners (Tomlinson, Kaplan, Renzulli, Purcell, Leppien & Burns, 2002) recently published by the National Association of Gifted Children. This model adheres to the belief that "most, if not all, learners should work consistently with concept-focused curriculum, tasks that call for high level thought, and products that ask students to extend and use what they learned in meaningful ways" (Tomlinson et al., 2002, p.13).

This model is used as the basis for the design of the curriculum, focusing on the Core Curriculum with the Big Ideas of Mathematics in each unit and the Curriculum of Practice, an outgrowth of the Multiple Menu Model. Using the Multiple Menu Model, we will help students assume the

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6http://www.nagc.org/uploadedFiles/About_NAGC/Division_Pages/Curr%20SCOPE_FEB07.pdf
role of mathematicians as they develop critical and creative thinking skills in solving real problems. Projects will be included in the units and used as a way for students to pursue some of their own interests. Renzulli's Enrichment Triad Model (Renzulli, 1977; Gubbins, 1995) is one of the instructional approaches; students will choose a topic to investigate, receive support and coaching from the teacher, and produce a product for a real audience.

Professional Development:

Teachers will receive training to increase their mathematical background in the content areas and to use teaching strategies developed to promote enrichment learning and mathematical discourse within the classroom. During the first three summers, the teachers implementing the curriculum units will receive the training. Teams of teachers will receive training on curriculum differentiation in grades 3, 4 and 5. A strong focus will be placed on developing mathematical discourse to encourage students to think deeply about the mathematics.

This training will take place during the summer for a 2-week period and during the school year (approximately 4 in-service days). Teachers will receive and keep resource materials and manipulatives that support the curriculum units. Ongoing technical assistance in the classroom will include videotaping of lessons with conferencing to help teachers reflect on their teaching by witnessing the discourse in the classroom.

Teachers can communicate with each other across schools and with the project staff on a regular basis through the internet portal that has been recently initiated. This technology will also allow teachers to be abreast of latest developments in the field of mathematics education and gifted education by providing links to resources and articles of interest.

Results:

The results of the Project M3 have been very promising. The students in the program have made statistically significant gains on the Measures of Academic Progress (MAP) and on open-ended response questions from the Trends in International Mathematics and Science Study (TIMSS) and the National Assessment of Educational Progress (NAEP). Furthermore, they have scored significantly higher than a comparison group of mathematically talented students on these standardized tests. Not only have the students made quantitative gains in their mathematics achievement, but the teachers also report a change in their students’ attitudes toward mathematics. As one teacher said, “The children love math. They look forward to math class every day! In previous math classes, children literally cried when they came to ‘problem solving.’ These kids enjoy problem solving because of the program.” This increase in enjoyment of mathematics is accompanied by a sense of accomplishment at being able to communicate mathematically. This is embodied by one student’s comment, “I can do it. I can write about math.” Furthermore, the project has been successful at identifying mathematically promising students from underrepresented groups. This success has carried over to the school level. One curriculum coordinator commented, “The M3 project has prompted us to look more closely at the academic ability of the students who have been identified to participate in the program…We have identified more minority and ESOL students than ever before.”
Elementary Science

The science program is designed to use a constructive view of learning skills, sequences, and subject knowledge. BMSS 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. Some examples of Standards are presented in Appendix F.

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.

BMSS’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. BMSS will implement the proven instructional science curricula, the Science and Technology for Children (STC) and Developmental Approaches in Science, Health & Technology -DASH (Gifted Program) 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 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, students will be encouraged to participate in competitions such as Science Fair, Science Olympiad, 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\(^7\). The NSRC began developing STC® in 1988; the curriculum was completed in 1997.

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.

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\(^8\). 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 adolescents 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.

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\(^7\) http://www.ed.gov/pubs/NatAtRisk/index.html

\(^8\) http://www.carolina.com/Carolina_curriculum/stc/publications.as#Evidence
- 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.
- 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.

<table>
<thead>
<tr>
<th>Grade Levels</th>
<th>Life and Earth Sciences</th>
<th>Physical Science and Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>STC K-1</td>
<td>Organisms</td>
<td>Solids and Liquids</td>
</tr>
<tr>
<td></td>
<td>Weather</td>
<td>Comparing and Measuring</td>
</tr>
<tr>
<td>2-3</td>
<td>The Life Cycle of Butterflies</td>
<td>Changes</td>
</tr>
<tr>
<td></td>
<td>Soils</td>
<td>Rocks and Minerals</td>
</tr>
<tr>
<td></td>
<td>Plant Growth</td>
<td>Chemical Tests</td>
</tr>
</tbody>
</table>
Table: The summary of STC® Modules.

<table>
<thead>
<tr>
<th>4-5</th>
<th>Animal Studies</th>
<th>Land and Water Ecosystems</th>
<th>Electric Circuits Food Chemistry Magnets and Motors</th>
<th>Motion and Design Floating and Sinking The Technology of Paper</th>
</tr>
</thead>
</table>

**Professional Development:**
High-quality professional development is an essential component of the STC program. Professional development courses offered through the National Science Resources Center (NSRC) Professional Development Center (PDC). The PDC offers courses that move teachers through all levels of the proficiency continuum – from novice to expert. The PDC Courses provide teachers with the opportunity to learn and practice the skills needed to create supportive classrooms environments for student inquiry. PDC Courses are available to existing and new users of STC, district science specialists, teacher leaders, and educators planning to adopt a new science curriculum. PDC Courses model the inquiry approach and are designed by the curriculum developers for STC, presented by NSRC PDC-certified trainers, designed to promote integration of educational technology and technological design in the classroom, and tailored to the National Science Education Standards.⁹

**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

⁹ [http://www.nsrconline.org/professional_development/index.html](http://www.nsrconline.org/professional_development/index.html)
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.\textsuperscript{10}

- 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.\textsuperscript{11}

- 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.\textsuperscript{12}

**Developmental Approaches in Science, Health & Technology**

Developmental Approaches in Science, Health & Technology (DASH) is an engaging K–6 inquiry-based program in science, health, and technology, which has been developed by The Curriculum Research and Development Group at the University of Hawaii (CRDG), validated by the U.S. Department of Education’s Program Effectiveness Panel, and awarded a dissemination grant through the National Diffusion Network. Primary developmental funding was from the National Science Foundation, the Hawaii State Department of Business, Economic Development, and Tourism, and the University of Hawai‘i.

It reaches the spectrum of learners in typical classrooms through 650-plus interconnected, developmentally appropriate, hands-on activities that align with national standards.

The goal of DASH is to capture the imagination of elementary students by engaging them in questioning and making sense of things unknown, inventing and building to solve problems, and caring for themselves through their experiences in learning science, health, and technology. To accomplish this goal, DASH activities at each grade level are organized into ten content clusters: Learning Time; Weather and Sky; Animals; Plants; Food and Nutrition; Health and Safety; Wayfinding and Transportation; Energy and Communication; Conservation, Recycling and Decomposition; and Matter, Space, and Construction.

\begin{itemize}
\item \textsuperscript{10} http://www.carolina.com/stc/publications/evidence/michigan.pdf
\item \textsuperscript{11} http://www.carolina.com/carolina_curriculum/stc/acrobat/westvalley_brief.pdf
\item \textsuperscript{12} http://www.carolina.com/stc/publications/evidence/vips.pdf
\end{itemize}
Content is sequential and spiraled to promote reinforcing, multi-year development of concepts and skills. Students work inside and outside the classroom as a research community, modeling real-world roles of scientists and technologists. The teacher acts as research team leader. Assessment is integrated into instruction; each activity has a portfolio-building product; each grade level has a concept-and-skill inventory for student self-assessment. DASH articulates well with language arts, mathematics, social studies, physical education, and the arts. Students with various backgrounds and learning styles master concepts and skills in contexts of authentic technological and scientific exploration, invention, explanation providing models for thinking and problem solving.

DASH is used by over 12,000 teachers in 26 states. DASH teachers are supported by a network of 14 universities and a cadre of 175 teacher instructors. DASH has earned the following recognitions:

- One of seven programs designated as promising by the U.S. Department of Education’s Expert Panel on Mathematics and Science Education (2001)
- Identified as an effective program in School Health: Findings from Evaluated Programs, a collaborative publication of the American School Health Association and the U.S. Department Health and Human Services (1998).
- Identified as one of three research-based, effective science “skill and content” reform models in a nationwide search by the Northwest Regional Educational Laboratory for the U.S. Department of Education’s Catalog of School Reform Models (1998).

Standard-Based Program:
DASH meets The National Science Education Standards (NSES) and the American Association for the Advancement of Science (AAAS) Benchmarks for Science Literacy through ten learning clusters of activities specifically integrating science, health and technology.

Professional Development:

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15 Curriculum Research & Development Group. (1996a). *Alignment of Developmental Approaches in Science, Health and Technology (DASH) and the National Science Education Standards Grades K–4*. Honolulu, HI

There are separate teacher institutes for DASH levels K–1, 2–3, 4, 5, and 6. These institutes prepare teachers to teach the program successfully by developing knowledge of the program’s philosophy and objectives, ability to use the variety of instructional strategies inherent in DASH, understanding of the science, health, and technology content necessary to teach the course, and engage in the excitement and enthusiasm for teaching science in the elementary school. Participants accomplish these goals by experiencing the program in the role of a student and working through the developmental sequence of activities. Besides focusing on the content of the activities, the course immerses teachers in the challenge and excitement of the student experience. DASH teachers are fully trained with both institutes and continued support programs. Teachers attend a 10-day teachers’ institute where they (a) participate in the same activities and inquiries and create the same products their students will in their classes; (b) learn to use the variety of teaching behaviors used in the DASH program; and (c) analyze the DASH learning, teaching, and assessment model through reflective and in-depth discussions. A two-year professional development program is also provided, with monthly meetings and continued newsletter, e-mail, Website, and 800 number supports.

Results:
In many formative evaluations conducted in different states that have implemented DASH, the impact of DASH on student learning is found in the following way:

1.) DASH students demonstrate understanding of fundamental concepts and use of essential skills in science, health, and technology as documented in case studies, including observations, artifacts, documents, and interviews.
   a. Students demonstrate knowledge of concepts.
   b. Students use basic inquiry skills and data gathering techniques.
   c. Students demonstrate integration and application of concepts.

2.) DASH students are self-directed learners taking responsibility for their own learning as reflected in engaged learning time, planning and completion of tasks, and use of multiple resources as documented in case studies including observations, artifacts, documents, and interviews.
   a. Students consistently demonstrated 85%–95% engaged learning time.
   b. Students demonstrated self-directed responsibility for assigned tasks.
   c. Students demonstrated responsibility for fellow students and the classroom.

3.) Experienced DASH teachers changed their attitudes and approaches toward elementary science in ways that result in increased instructional time spent on science and focus on students’ learning, as documented in case studies including observations, documents, and interviews.
   a. Teachers became more positive in their attitudes toward teaching science.
   b. Teachers changed approaches to teaching science.
   c. Teachers spent more time teaching science than the national average.

4.) The schools that have adopted DASH have increased their achievements in state tests and standardized tests.
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 Harcourt 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. 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 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 Next Generation Sunshine State Standards by participating in the discovery of man and his contributions to the whole of humanity. Some examples of Standards are presented in Appendix F.

Middle School Curriculum

Middle School Language Arts

The goal of the CCSS 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 core of the
curriculum will incorporate and be aligned with Common Core State Standards. Some examples of Standards are presented in Appendix F.

The School will use the state-approved Holt McDougal Series or other state-adopted text as 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 Common Core State 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, 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:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>COURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>M/J Language Arts I</td>
</tr>
<tr>
<td>6</td>
<td>M/J Language Arts I Advanced</td>
</tr>
<tr>
<td>6</td>
<td>M/J Language Arts I Through ESOL</td>
</tr>
<tr>
<td>6</td>
<td>M/J Reading Advanced</td>
</tr>
<tr>
<td>7</td>
<td>M/J Language Arts II</td>
</tr>
<tr>
<td>7</td>
<td>M/J Language Arts II Advanced</td>
</tr>
<tr>
<td>7</td>
<td>M/J Language Arts II Through ESOL</td>
</tr>
<tr>
<td>8</td>
<td>M/J Language Arts III</td>
</tr>
<tr>
<td>8</td>
<td>M/J Language Arts III Advanced</td>
</tr>
<tr>
<td>8</td>
<td>M/J Language Arts III Through ESOL</td>
</tr>
<tr>
<td>6-8</td>
<td>M/J Intensive Reading*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESOL</th>
<th>M/J ESOL Developmental Language (L1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8</td>
<td>M/J ESOL Developmental Language (L2)</td>
</tr>
<tr>
<td>6-8</td>
<td>M/J ESOL Developmental Language (L3)</td>
</tr>
<tr>
<td>6-8</td>
<td>M/J ESOL Developmental Language (L4)</td>
</tr>
</tbody>
</table>

*Developmental instruction in reading may be required during grade 6 when student performance in grade 5 indicates a need for strengthening. These courses will be in addition to the regular language arts courses and may be offered as electives. Students scoring at Levels 1 and 2 on the most recent administration of FCAT 2.0 or PARCC reading 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.

Middle School Mathematics

Math Curriculum incorporates CCSS. The incorporation of CCSS 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 school 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 CCSS 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. The Math Curriculum will align with Florida's Next Generation Sunshine-Common Core State Standards. Some examples of Standards are presented in Appendix F.
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 NCTM Principles and CCSS. In order to implement mathematics curriculum, The School is committed to adopt the proven instructional mathematics curricula, the College Preparatory Mathematics (CPM).

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 Florida Comprehensive Assessment Test, are essential for a student to succeed within the real world work environment. These courses cover concepts and materials that are aligned to NGSSS-CCSS.

<table>
<thead>
<tr>
<th>GRADE</th>
<th>COURSE</th>
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<tbody>
<tr>
<td>6</td>
<td>M/J Mathematics I*</td>
</tr>
<tr>
<td>6</td>
<td>M/J Mathematics I Advanced</td>
</tr>
<tr>
<td>6-8</td>
<td>M/J Intensive Mathematics</td>
</tr>
<tr>
<td>7</td>
<td>M/J Mathematics II*</td>
</tr>
<tr>
<td>7</td>
<td>M/J Mathematics II Advanced</td>
</tr>
<tr>
<td>8</td>
<td>M/J Mathematics III (Pre-Algebra)</td>
</tr>
<tr>
<td>8</td>
<td>Algebra I</td>
</tr>
<tr>
<td>8</td>
<td>Algebra I (Honors)**</td>
</tr>
<tr>
<td>8</td>
<td>Geometry (Honors)**</td>
</tr>
</tbody>
</table>

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

** High School Credit(s) for Students in Grades 6, 7, and 8 - Students may enroll in selected high school courses for the purposes of pursuing a more challenging program of study.
College Preparatory Mathematics (CPM)

College Preparatory Mathematics (CPM) is offering series of textbooks to meet the grade 6-8 and high school CCSS content and practice standards: Core Connections, Courses 1 - 3 and Core Connections Algebra 1 & 2 and Geometry. 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 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 NCTM standards and CCSS content and practice 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 NCTM standards that suggest that 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, designated one of five "Exemplary Mathematics Programs" by the U.S. Department of Education in October, 1999, is taught by more than 3,000 teachers in more than 900 schools across the country. It 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.

For more detail see [http://ww.cpm.org](http://ww.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 NCTM 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 the recently adopted Next Generation Sunshine State Science Standards. Some examples of Standards are presented in Appendix F.

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 Florida Science series and the Foundational Approaches in Science Teaching (FAST). 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.

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.

<table>
<thead>
<tr>
<th>GRADE</th>
<th>COURSE</th>
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<tbody>
<tr>
<td>6</td>
<td>M/J Comprehensive Science I</td>
</tr>
<tr>
<td>6</td>
<td>M/J Comprehensive Science I Advanced</td>
</tr>
<tr>
<td>7</td>
<td>M/J Comprehensive Science II</td>
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<tr>
<td>7</td>
<td>M/J Comprehensive Science II Advanced</td>
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<tr>
<td>8</td>
<td>M/J Comprehensive Science III</td>
</tr>
<tr>
<td>8</td>
<td>M/J Comprehensive Science III Advanced</td>
</tr>
<tr>
<td>8</td>
<td>Earth Space Science</td>
</tr>
<tr>
<td>8</td>
<td>Earth Space Science Honors*</td>
</tr>
<tr>
<td>8</td>
<td>Biology I</td>
</tr>
<tr>
<td>8</td>
<td>Biology I Honors*</td>
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</tbody>
</table>

* High School Credit(s) for Students in Grades 6, 7, and 8 - Students may enroll in selected senior high school courses for the purposes of pursuing a more challenging program of study.

**The Foundational Approaches in Science Teaching (FAST)**

*General Description:*
The Foundational Approaches in Science Teaching (FAST) program is a sequence of three inquiry science courses especially designed for middle-school students. The courses emphasize the foundational concepts and methods of the physical, biological, and earth sciences. Student investigations are organized into three strands called physical science, ecology, and “relational
study,” which integrate the study of science, technology, and society. The goal of FAST is to develop scientifically literate students who have both the background necessary for understanding environmental concerns in our technological society and basic tools for further study in science. The main objectives are to develop relevant thinking skills, laboratory skills, and knowledge of core science concepts.

FAST students develop a scientific world view by doing science—generating questions, designing and carrying out experiments, collecting and analyzing data, and researching, drawing conclusions based on evidence, writing reports, and communicating findings. Students work in small collaborative groups that function as research teams, becoming producers rather than only receivers of information. The teacher is the research director and coordinator, a colleague who stimulates and facilitates ever deeper probing into problems. Through the process of inquiry and research, student teams generate the theoretical content of the program.

As scientists, students design many of their own experiments. In a physics unit, for example, students formulate theoretical models of heat and light and test their models. They also invent and build tools and instruments for some investigations. As technologists, students apply recently mastered scientific principles, such as the concepts of buoyancy and density in designing and constructing a working model of a submarine. By experiencing multiple roles (scientist, engineer, technologist, politician, and citizen), students practice and reinforce skills from many areas, including math, written and oral communications, and social studies. FAST meets the standards and goals for science education set by the National Research Council, the American Association for the Advancement of Science, and the National Center for Improving Science Education.

Results:
In several impact evaluation studies, FAST students have outperformed non-FAST students in a number of areas. FAST students have demonstrated significantly higher science achievement on CTBS and the California Achievement Test, significantly higher performance on basic thinking and problem-solving skills (CTBS), significantly higher gains in manipulative laboratory skills (Laboratory Skills Test), and significantly higher creative thinking skills (Torrance Tests of Creative Thinking). Results were consistent for all FAST students, regardless of gender, learning style differences and ability. Also, FAST was designated by the Educational Testing Service as one of two programs nationwide with the best comprehensive middle-school science curricula.

Student Populations:
FAST is designed as a science program for students in heterogeneous, untracked classes. The Educational Testing Service identified FAST as an exemplary program serving minority and female populations during the middle-school years. Separate studies have shown the effectiveness of FAST in teaching gifted and mildly disabled students as well.

Special Considerations:
FAST incorporates a wide variety of instructional strategies designed to address the different learning styles and developmental needs of students ages 12-15. Some of the instructional strategies appropriate for student investigations are cooperative/collaborative learning, whole group instruction, independent and self-directed learning, peer coaching, graphing, concept mapping, self-assessment, research, and simulations.
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 NGSSS. 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 the Sunshine State 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.

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<thead>
<tr>
<th>GRADE</th>
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<tbody>
<tr>
<td>6</td>
<td>M/J World Geography</td>
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<tr>
<td>6</td>
<td>M/J World Geography Advanced</td>
</tr>
<tr>
<td>7</td>
<td>M/J Civics</td>
</tr>
<tr>
<td>7</td>
<td>M/J Civics Advanced</td>
</tr>
<tr>
<td>8</td>
<td>M/J US History and Career Planning</td>
</tr>
<tr>
<td>8</td>
<td>M/J US History Advanced and Career</td>
</tr>
</tbody>
</table>

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 Planner (or other career information system such as CHOICES Explorer, etc.) and ePEP at FACTS.org. The School will use approved year long 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. Some examples of Standards are presented in Appendix F.

HIGH SCHOOL CURRICULUM

The School will have a rigorous college preparatory curriculum in the core subject areas to engage students. Since there will be a transition from middle school to high school, the students adaptation to the high school environment will be much easier. Students will already be equipped with intense study and higher level thinking skills during this transition. The School will seek to increase the student’s knowledge base in each succeeding grade level, always moving forward and building upon the preceding acquired knowledge, to ensure the student builds capacity and is college ready and college bound, and without the need for remediation once he/she gets there. Furthermore, the School curriculum will prepare all students for success in postsecondary education to ensure all students meet and/or exceed the requirements for high school graduation, including mastery of all respective NGSSS-CCSS as evidenced by meeting or exceeding goals and objectives.

The School’s curriculum will not ignore the students who need remediation or not making adequate progress towards mastery of the Next Generation Sunshine-Common Core State Standards and/or students with special learning needs (e.g. ELL students and students with disabilities) designed. To serve students of all ability levels, those students will have access to supervised study time and tutoring services during non-school hours (e.g. after school, weekend studies, etc. and whenever possible, to accelerate and/or remediate student achievement).

In order to meet the graduation requirements, students will be exposed full range of academic courses. Advanced academic programs will be available through honors and Advanced Placement courses for those students who wish to pursue advance academic program.

The School will provide opportunities for Dual Enrollment Courses at institutions of higher education and/or through Virtual School to earn additional credits. All students at the School will be encouraged to maximize their academic potential by taking the most rigorous program in which they can be successful.

The graduation path will include opportunities to take rigorous academic courses designed to prepare students for their future academic and career choices.
To assist students and parents with this task, the School will provide each student in sixth through ninth grade and their parents with information concerning high school graduation options, including the respective curriculum requirements for those options, so that students and their parents can have a program of study that best fits their needs.

Based on recent legislation, use of Florida's End-of-Course Assessments for graduation or course credit are being revised. Some information has been redacted, and an updated version will be posted to the department's website. Senate Bill 1076 outlines the details on the changes passed by the Legislature.

In the current graduation requirements pursuant to s. 1003.429 for Four-year, 24-Credit Program; students need to have;

Sixteen core curriculum credits:
1. Four credits in English, with major concentration in composition, reading for information, and literature.
2. Four credits in mathematics, one of which must be Algebra I, a series of courses equivalent to Algebra I, or a higher-level mathematics course. Beginning with students entering grade 9 in the 2010-2011 school year, in addition to the Algebra I credit requirement, one of the four credits in mathematics must be geometry or a series of courses equivalent to geometry as approved by the State Board of Education. Beginning with students entering grade 9 in the 2010-2011 school year, the end-of-course assessment requirements under s. 1008.22(3)(c)2.a.(I) must be met in order for a student to earn the required credit in Algebra I. Beginning with students entering grade 9 in the 2011-2012 school year, in addition to the Algebra I and geometry credit requirements, one of the four credits in mathematics must be Algebra II or a series of courses equivalent to Algebra II as approved by the State Board of Education. Beginning with students entering grade 9 in the 2012-2013 school year, in addition to the Algebra I and geometry credit requirements, one of the four credits in mathematics must be Algebra II or a series of courses equivalent to Algebra II as approved by the State Board of Education.
3. Three credits in science, two of which must have a laboratory component. Beginning with students entering grade 9 in the 2011-2012 school year, one of the three credits in science must be Biology I or a series of courses equivalent to Biology I as approved by the State Board of Education. Beginning with students entering grade 9 in the 2011-2012 school year, the end-of-course assessment requirements under s. 1008.22(3)(c)2.a.(I) must be met in order for a student to earn the required credit in Biology I. Beginning with students entering grade 9 in the 2013-2014 school year, one of the three credits must be Biology I or a series of courses equivalent to Biology I as approved by the State Board of Education, one credit must be chemistry or physics or a series of courses equivalent to chemistry or physics as approved by the State Board of Education, and one credit must be an equally rigorous course, as determined by the State Board of Education.
4. Three credits in social studies as follows: one credit in United States history; one credit in world history; one-half credit in economics; and one-half credit in United States government.
5. One credit in fine or performing arts, speech and debate, or a practical arts course that incorporates artistic content and techniques of creativity, interpretation, and imagination. Eligible practical arts courses shall be identified through the Course Code Directory.
6. One credit in physical education to include integration of health.
7. Eight credits in electives.

- For each year in which a student scores at Level 1 on FCAT Reading, the student must be enrolled in and complete an intensive reading course the following year. Placement of Level 2 readers in either an intensive reading course or a content area course in which reading strategies are delivered shall be determined by diagnosis of reading needs.
- For each year in which a student scores at Level 1 or Level 2 on FCAT Mathematics, the student must receive remediation the following year. Directory.
- Beginning with students entering grade 9 in the 2011-2012 school year, at least one course within the 24 credits required in this subsection must be completed through online learning. An online course taken during grades 6 through 8 fulfills this requirement.

Furthermore in addition to course requirements, students will also earn a qualifying score on the Reading Florida Comprehensive Assessment Tests (FCAT) and/or approved concordant scores as allowed by State, passing score in Algebra I, demonstrate computer literacy from a valid course taken between sixth and twelfth grade, complete 40 hours of service learning hours, and earn an unweighted, cumulative grade point average (GPA) of at least 2.0. Promotion from grade to grade will be in accordance with the requirements set forth in the Student Progression Plan. All students will have accessible to them, the requirements necessary for eligibility to participate in the Florida’s Bright Futures Scholarship Program and to earn a College-Ready Diploma. All students will be encouraged to participate in Advanced Placement and Dual enrollment courses.

In addition, if students do not pass the required Florida Algebra I EOC assessments, they must retake the assessment until they pass it. The Algebra I EOC assessment is administered at the conclusion of both the fall and spring semesters to accommodate courses that conclude at the end of each semester. In addition to fall and spring administrations, there is a summer administration.

In accordance with state mandates, as needed, remediation courses (Intensive Reading, Intensive Reading Plus, and/or Intensive Mathematics) will be offered within State and District guidelines (e.g. Broward decision tree) for those students who qualify for said intensive programs as a result of not meeting grade level proficiency and/or mastering respective sunshine standards, as evidenced by their achievement scores and results.
High School Language Arts

The School will align the Language Art curriculum with the state-approved Broward County Public Schools- K-12 Comprehensive Research-Based Reading Plan (CRRP), as established by the FL-DOE. The CRRP will provide teachers a systematic framework for literacy instruction to focus on the teaching of reading and writing throughout all areas of the curriculum, and in addition provides core and supplemental reading intervention programming for every child who is reading below grade level. The Language Arts program will reflect critical and creative thinking and a harmonious balance of its several components, including reading, writing, speaking, listening and viewing. Teachers will address all Next Generation Sunshine-Common Core Standards and benchmarks for Language Arts instruction. Some examples of Standards are presented in Appendix F.

The School will implement research-based strategies that have proven successful in teaching reading, including, but not limited to: teaching reading for authentic meaning- making literacy experiences for pleasure to be informed and to perform a task; using high quality literature; providing explicit, systemic instruction that is purposeful and where the student is told what, why and how they are learning (explicit) and the instruction builds on their prior knowledge skills and concepts (systematic); designating an uninterrupted reading block and utilizing state-adopted textbooks and programs.

The purpose of the School’s Language Arts program is to provide instruction and promote academic excellence in reading, writing, oral communications, and the interpretation of literature. Instruction in language arts will continuously emphasize fundamental functions of language. The content will include, but not be limited to, the study and interpretation of traditional and contemporary literature, application of the writing process, formal grammar and usage in preparation for the PSAT/NMSQT, SAT, and ACT sections of Writing and English, effective use of speaking and listening skills, higher-order reading skills in preparation for the Florida Comprehensive Assessment Test, and study skills enabling success in school and beyond when entering the world of work.

For students reading below grade level, remedial action will be taken and formalized assistance given, including but not limited to implementation of reading program will be described in the next sections.

Writing:
As part of the Language Arts Curriculum, students will enhance writing skills through daily writing assignments in various modes, including, but not limited to, expressive, persuasive and narrative. All students at the school will be required to write across the curriculum on a daily basis. As part of the Writing program, students will respond and be instructed utilization of SAT and ACT prompts regularly, as well as emphasis in the writing process, especially in grades 11-12, will occur. Each class will be responsible for on-going writing projects, including but not limited to FCAT Daily lessons, that is embedded within the thematic unit of study. Writing skills that enhance the students’ ability to perform well on the FCAT. FCAT Writing will be incorporated into the curriculum and formal grammar and usage instruction will be provided, especially in preparation for PSAT, SAT, and ACT sections on Writing and English.
Four years of High School English are required for graduation. Students will be placed in the appropriate English course on the basis of scores on standardized tests, past performance in classes, and teacher recommendations. Course content for these courses will be delivered in accordance with course descriptions provided by the Department of Education available at http://www.fldoe.org/bii/curriculum/course_descriptions/ and will ensure mastery of respective Common Core State Standards. Course delivery will ensure teachers cover concepts and utilize materials aligned to the Common Core State Standards. In addition, Regular and Honors English courses will emphasize FCAT-tested benchmarks for grades 9 and 10, and specific emphasis will be given to SAT Critical Reading and ACT Reading at grades 11 and 12. To that end, the School will follow the state course descriptions for the below listed courses with fidelity;

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>GRADE LEVEL</th>
<th>CREDIT</th>
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</thead>
<tbody>
<tr>
<td>Intensive Reading</td>
<td>9-12</td>
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<tr>
<td>English I</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>English I Honors</td>
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<td>1</td>
</tr>
<tr>
<td>English I through ESOL</td>
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<td>1</td>
</tr>
<tr>
<td>English II</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>English II Honors</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>English II through ESOL</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>English III</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>English III Honors</td>
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<td>1</td>
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<tr>
<td>English III through ESOL</td>
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<td>1</td>
</tr>
<tr>
<td>English IV</td>
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<td>English IV through ESOL</td>
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</tr>
<tr>
<td>AP English Language and Composition</td>
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<td>1</td>
</tr>
<tr>
<td>AP English Literature</td>
<td>11/12</td>
<td>1</td>
</tr>
<tr>
<td>Speech I</td>
<td>9-12</td>
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</tr>
<tr>
<td>Speech II</td>
<td>10-12</td>
<td>1</td>
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</table>

New graduation requirements will be effective in Language Art as it is apply.

The school will use Holt McDougal series for standard, and Bedford, Freeman & Worth series for AP classes, or other State adopted textbooks. In addition Read XL, Jamestown Reading Navigator, Accelerated Reader (AR) will be implemented for those students reading below grade level expectations. Details about these programs will be given in the Section 4, Reading part.
High School Mathematics

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 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 implement the NGSSS-CCSS and the objectives from the state course code descriptions for senior high content, as the base for instruction. The new mathematics standards are organized into familiar Bodies of Knowledge such as: Algebra; Geometry; Trigonometry; Calculus; Probability; Statistics; Discrete Mathematics; and Financial Literacy, making students college-ready at the conclusion of their High School career. Some examples of Standards are presented in Appendix F.

The School math curriculum will use the six principles for school mathematics by National Council of Teachers of Mathematics (NCTM) as a guide to when developing its program:

- Equity. Excellence in mathematics education requires equity—high expectations and strong support for all students.

- Curriculum. A curriculum is more than a collection of activities: it must be coherent, focused on important mathematics, and well articulated across the grades.

- Teaching. Effective mathematics teaching requires understanding what students know and need to learn and then challenging and supporting them to learn it well.

- Learning. Students must learn mathematics with understanding, actively building new knowledge from experience and prior knowledge.

- Assessment. Assessment should support the learning of important mathematics and furnish useful information to both teachers and students.

- Technology. Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning.

Proper delivery of instruction drives academic success, and when teachers know the learners, know their resources, and are aware of the strategies needed to improve student learning. Therefore, the delivery of instruction will include determining students’ current mathematical
skills, matching instructional strategies and assessments to the objectives, and planning instruction that is appropriate and challenging to students at all levels.

The School will use research-based curriculum that is rigorous and standards-based. Some of the curriculum, programs, texts, and curriculum supplements the school intends to use to deliver Mathematics instruction and achieve student mastery of the SSS, include:

In addition to the College Preparatory Mathematics (CPM) for high school level discussed earlier; the school will incorporate the state-adopted textbooks, proven effective and selected according to the content to be delivered from publishers, such as: Holt McDougal, Key Curriculum Press, Prentice Hall, Carnegie Learning, Inc. Bedford, Freeman and Worth Publishing Group.

The School’s curriculum is designed to serve students of all ability levels, and therefore, students in need of remediation or not making adequate progress towards mastery of the Sunshine State Standards and/or students with special learning needs (e.g. ELL students and students with disabilities) will have access to supervised study time and tutoring services during non-school hours (e.g. after school, weekends, etc. and whenever possible, to accelerate and/or remediate student achievement). Additionally, Struggling students will receive the additional time and support they need in order to be successful.

The School will also address the needs of advanced learners at all grade levels, via rigorous and relevant coursework offered to students, who by virtue of outstanding abilities, are capable of high performance and require differentiated educational programs beyond those normally provided by the regular school program in order to realize their contributions to self and society. Some of these options within the Mathematics branch include:

- Honors courses
- Advanced placement program
- Dual enrollment program

Technology will also be integrated into the mathematics curriculum to enable students to explore, visualize, solve, and better describe the concepts they are learning. Moreover, technology is an essential tool that will be integrated in mathematics lessons to facilitate the teaching and learning of mathematics and allow students to organize and visualize mathematics concepts. Graphing software, calculators, computers, and interactive white-boards are some of critical technology tools that will be used as part of an effective mathematics program.

The following is a list of courses that may be offered at the School:

New graduation requirements will be effective in Math as it is apply. Additional mathematics electives will be made available to students of the School, they may elect to pursue wherever possible.
The purpose of the courses offered is to provide students with a broad knowledge of scientific concepts and provide a solid foundation for students to pursue postsecondary education. 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 develop Professional Learning Communities of science teachers to help students:

- examine and explore student misconceptions and provide opportunities for students to apply concepts in the real world
- explore their surroundings for evidence of cause and effect relationships
- work on hands on interactive activities and write to compare and contrast biological and environmental concepts
- conduct laboratory investigations during and after school hours to increase scientific thinking.

One of the ways in which students will be encouraged to build upon their knowledge and understanding of science is through the process of scientific inquiry and considerable emphasis has been placed in the science curricula on engaging students in this process.

The Science curriculum will be aligned with the Next Generation Sunshine State Standards for Science and the content standards of the National Science Education Standards. Some examples of Standards are presented in Appendix F. Students will be engaged in science inquiry, constructing an understanding of science concepts through their own investigations and analyses. Classroom teaching strategies will emphasize active learning, both individually and in groups. Students will be introduced to problem solving, communication, and reasoning through experiments, modeling, investigations, and real-world applications. The instruction will include the use of manipulatives, discovery method, inquiry, higher-order thinking skills, technology, context based problem-solving activities, cooperative-learning groups, and verbal and written communication.

In addition, science teachers will incorporate at least one period of laboratory experience per week into their instruction as hands-on science learning experiences. The School will have a
Science Team to participate local and national competitions such as a science fair, science bowl, Science Olympiad.

The School will apply the new graduation requirements in Science curriculum as it is implemented. The following is a list of the courses that may be offered:

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>GRADE LEVEL</th>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Space Science</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Earth Space Science Honors</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Biology</td>
<td>9-10</td>
<td>1</td>
</tr>
<tr>
<td>Biology I Honors</td>
<td>9-10</td>
<td>1</td>
</tr>
<tr>
<td>AP Biology</td>
<td>10-12</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry</td>
<td>10-12</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry Honors</td>
<td>10-12</td>
<td>1</td>
</tr>
<tr>
<td>AP Chemistry</td>
<td>11-12</td>
<td>1</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>11-12</td>
<td>1</td>
</tr>
<tr>
<td>Physical Science</td>
<td>10-12</td>
<td>1</td>
</tr>
<tr>
<td>Anatomy and Physiology</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Physics</td>
<td>11-12</td>
<td>1</td>
</tr>
<tr>
<td>Physics Honors</td>
<td>11-12</td>
<td>1</td>
</tr>
<tr>
<td>Anatomy and Physiology Honors</td>
<td>10-12</td>
<td>1</td>
</tr>
<tr>
<td>Marine Science Honors</td>
<td>10-12</td>
<td>1</td>
</tr>
</tbody>
</table>

Some of the curriculum, programs, texts, and curriculum supplements the School intends to use to deliver Science instruction and achieve student mastery of the Next Generation SSS include: State-adopted textbooks, proven effective and selected according to the content to be delivered from publishers, such as Bedford, Freeman and Worth Publishing Group; Prentice Hall; Glencoe; Holt McDougal; It's About Time, Herff Jones Education Division; McGraw Hill.

High School Social Studies

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 main purpose for the Social Studies program will be to promote civic competence and ensure that the values and ideals that have shaped our democratic nation continue to be instilled in our youth. The comprehensive social studies program will:

- emphasize content, concepts, and skills from the social sciences, the humanities, and, where appropriate, mathematics, and the natural sciences;
- reflect a clear commitment to democratic beliefs and values;
- encourage civic responsibility and active participation;
- promote high expectations for all students;
- incorporate a multicultural perspective;
- reinforce the development of a global perspective;
- promote understanding of social, political, and economic institutions;
• encourage student involvement in community service;
• focus on the identification of the potential solutions to local, national, and world problems;
• involve students in their learning by using a variety of teaching strategies and instructional materials; and
• promote an interdisciplinary approach to learning.

The Social Studies curriculum will be delivered via NGSSS-CCSS, State-adopted and research-based texts, and will address all Social Studies graduation requirements as applicable. Some examples of Standards are presented in Appendix F. The School will ensure all state mandates and standards and course content are in place as specified in the course content description provided by the State. Additionally, some of the topics in the Social Studies curriculum:
- African-American History Requirement
  History of African peoples before the political conflicts that led to the development of slavery, the passage to America, the enslavement experience, abolition, and the contributions of African Americans to society.
- Holocaust Requirement
  History of the Holocaust (1933-1945), the systematic, planned annihilation of European Jews and other groups by Nazi Germany, a watershed event in the history of humanity, to be taught in a manner that leads to an investigation of human behavior, an understanding of the ramifications of prejudice, racism, and stereotyping, and an examination of what it means to be a responsible and respectful person, for the purposes of encouraging tolerance of diversity in a pluralistic society and for nurturing and protecting democratic values and institutions.
- Hispanic Contributions to the United States
- Women’s Contributions to the United States
- 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).

Some of the state adopted texts and curriculum supplements the School may use, to deliver Social Studies instruction and achieve student mastery of the SSS include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Text Book</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMERICAN GOVERNMENT</td>
<td>MaGruder’s American Government with Florida State and Local Government.</td>
<td>Prentice Hall</td>
</tr>
<tr>
<td>AP HUMAN GEOGRAPHY</td>
<td>Human Geography: People, Place &amp; Culture, 8th ed.</td>
<td>Peoples Education</td>
</tr>
</tbody>
</table>
Students will be required to successfully complete three credits of Social Studies in fulfillment of graduation requirements. After the completion of the core courses, the School will encourage and recommend that students continue to take at least one social studies course per year, as applicable, as an elective.

The following is a list of the Social Sciences courses that may be offered at the School:

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>GRADE LEVEL</th>
<th>CREDIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>World History</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>World History Honors</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>AP World History</td>
<td>9-12</td>
<td>1</td>
</tr>
<tr>
<td>American History</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>American History Honors</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>AP American History</td>
<td>11-12</td>
<td>1</td>
</tr>
<tr>
<td>American Government</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>American Government Honors</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>AP US Government and Politic</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>AP Comparative Government and Politic</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>Economics</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>Economics Honors</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>AP Macroeconomics</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>AP Microeconomics</td>
<td>12</td>
<td>0.5</td>
</tr>
<tr>
<td>AP European History</td>
<td>9-12</td>
<td>1</td>
</tr>
<tr>
<td>World Cultural Geography</td>
<td>10-12</td>
<td>1</td>
</tr>
<tr>
<td>Latin American History</td>
<td>10-12</td>
<td>0.5</td>
</tr>
<tr>
<td>Psychology I</td>
<td>9-12</td>
<td>0.5</td>
</tr>
<tr>
<td>Psychology II</td>
<td>9-12</td>
<td>0.5</td>
</tr>
<tr>
<td>AP Psychology</td>
<td>10-12</td>
<td>1</td>
</tr>
</tbody>
</table>