INTRODUCTION TO CURRICULUM GUIDE
Grades 1 - 3, ages 6 - 9

This guide is designed for parents of children in early elementary school. It contains important information about the knowledge, skills and understanding your child will cover during the elementary years. The guide is intended to be a reference resource for you so that you feel better informed about the work your child is doing in class and so that you are able to discuss it with her/him and the teachers more knowledgeably.

Research shows that parent support is one of the most important influencing your child's levels of attainment in school. Good communication between home and school is of great importance to us. If you have any questions about your child's attainment levels, her/his home or class work, or would like to discuss any aspect of the curriculum, please contact your child’s teacher or the Assistant Head of School.

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**MONTESSORI MATERIALS AND CLASSROOM MANIPULATIVES**

Montessori School of Louisville classrooms are equipped with materials designed to address particular developmental needs of children at different ages. Dr. Montessori created activities that identify and sequence the steps children go through as they work to achieve each educational outcome. Each material presents one step in the learning process. The concept that the child is to discover is isolated. Furthermore, the materials are self-correcting to encourage children to solve problems independently. This builds self-confidence, analytical thinking and the satisfaction that comes from accomplishment.

The materials interrelate and build upon each other. They are presented sequentially over the years a child spends in the program. For example, students studying the binomial theorem in Algebra will recall experiences with a three dimensional puzzle in preschool called the binomial cube. Similarly, ideas of congruency, similarity, and equivalence are first presented as pre-school puzzles called constructive triangles. The concepts are extended at the elementary level into further detail in vocabulary and materials, leading more advanced students towards the discovery of the theoretical formulas and applications.

**THE PREPARED ENVIRONMENT**

The prepared learning environment presents children with the possibility of freedom and opportunities to develop self-discipline. The classroom environment is prepared to support six developmental drives shared by all children.

Exploration: Children need to explore, from their first efforts to conquer the home environment to the subsequent drive to reach out into the community and the world. Our classrooms provide abundant, age appropriate hands on activities designed to provide opportunities for exploration and movement.

Orientation: The need for orientation and order are provided for by establishing predictable classroom routines and by carefully sequencing activities on shelves by subject area. Our classrooms are designed to encourage calm, orderly independent learning and exploration.

Imagination: Human tendencies for imagination and abstraction are given free rein throughout the vast scope of the curriculum. Each part of the curriculum begins by presenting children with a big picture. This is followed with diverse ways for them to explore subjects that capture their imagination.

Repetition: Opportunities for repetition and manipulation of materials allow children's discoveries to become part of their broad background of knowledge. Children work on activities at their own pace, choosing materials they would like to use and working for as long as the materials hold their interest.

Precision: The drive towards precision and perfection inclines each child to imagine solutions, try them out, and if successful, use them to solve real-life challenges in the prepared environment.

Communications: Finally, communication through language allows children to cooperate with others, learn the wisdom of the past and make their contributions to humanity.

Children delight in working whenever the work leads to a sense of discovery. They gain the same feeling of worth from purposeful activities in school that adults experience as they go to their jobs and do their "work".

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MULTI-AGED LEARNING
Mixed age groups free children to enjoy their own accomplishments rather than comparing themselves to others. Older children provide leadership and guidance and benefit from the satisfaction of helping others. Younger children are encouraged by attention and help from the older children. They learn through observation of older children. At the same time, older children reinforce and clarify their knowledge by sharing it with younger ones. Children easily learn to respect others and at the same time develop respect for their own individuality. This interaction of different age children offers many occasions for building community, as well as nurturing the development of self-esteem. This encourages positive social interaction and cooperative learning.

THE THREE PERIODS OF LEARNING
Montessori School of Louisville teachers present lessons to students based on the three phases of learning identified by Montessori called the Three Periods.

First Period: is where material is presented with the goal of arousing the student's interest, enlarging their vocabulary and sharpening their observational skills. The first period engages the students' imagination and presents the "big picture". The student begins to formulate the questions which lead to exploration in the next stage.

Second Period: offers many opportunities for independent exploration by student. The purpose of the second period is to stimulate students to investigate various aspects of the topic. The Second Period offers students many opportunities to explore, formulate explanations and elaborate upon prior knowledge. Opportunities for repetition and manipulation of materials allow students' discoveries to become part of their broad background of knowledge. Sometimes there are planned explanations by the teacher but more often learning takes place through independent and small group activities. In the elementary classroom, much of the materials the teacher presents during the Second Period are in response to the questions students have generated. Frequently, rather than answering those questions directly, the teacher will either help the students find books or articles which provide answers or ask other students in the class to share what they have learned. Second Period activities include hands-on materials, reading and writing assignments and independent research opportunities.

Third Period: is mastery of the material. In the elementary classroom, mastery is evaluated through performance tasks such as posters, paintings, collages, dioramas, murals, timelines, models, poems, songs, written and oral reports, graphs, tables, skits, puppet shows, videos and multi-media presentations.
FREEDOM WITH RESPONSIBILITY
When children are allowed freedom in an environment suited to their needs, they grow in inner discipline and peace. After a period of intense concentration working with materials that fully engage their interest, children appear to be refreshed and contented. An interesting piece of work, freely chosen, adds to the child's energies and mental capacities and leads him/her to self-mastery.

Children are motivated by their drive for self-development. Long blocks of uninterrupted time (2½ - 3 hours) provide opportunities for them to develop problem-solving skills, to see the interdisciplinary connections of knowledge and to explore creative ideas. Children work independently in small collaboration groups and as a whole class community. The logical, sequential nature of the environment guides discovery and stimulates both creative thinking and thoughtful analysis. Montessori classrooms invite children to work enthusiastically to develop themselves.

POSITIVE DISCIPLINE POLICY
Students will hear the classroom guidelines of respect for one another, safety and maintaining the environment with such statements as:

"We walk in our classroom."

"We put our work back on the shelf."

"We walk around another student's work rug." "Can you find your work?"

"May I show you another way that work can be done?"

"As soon as you complete the lessons with this work, you will be ready for the next level."

"I can see that you are really tired of this work; it should not take you too long to finish if you stay focus on your work."

Teachers respect the students' feelings so that they can solve their own problems and differences. Sometimes the Teachers will help two or more students creatively solve their problems and differences. When students hear how each person feels and thinks, the children can work out a solution together. Teachers and students make every effort to work through misunderstandings and hurt feelings. In this environment, students can feel safe knowing that their feelings are heard and respected but more importantly how to deal with their own feelings as well as other people's feelings.
LOWER ELEMENTARY CURRICULUM (GRADES 1-3)

The Montessori elementary curriculum was developed as an integrated whole to serve the developmental needs of children from ages 6 to 12. Dr. Montessori termed this period the second plane of development. The continuity of the curriculum allows individual children to move through the various subject areas at the pace that is best for them, building confidence and genuine self-esteem. The division of the elementary into two stages, 6-9 year olds and 9-12 year olds is based on the students' developmental needs as they move towards adolescence. The work in the lower elementary is done with extensive Montessori material allowing the children not only to experience the depth and breadth of the curriculum, but also to become comfortable with their own learning styles. The upper elementary students, ages 9-12, transition to more abstract thinking relying more heavily on books and other resource material as they strengthen the work begun in the lower elementary. The overall goal of the Montessori Lower Elementary is to provide a prepared environment that meets the needs and tendencies of the child at this stage of their development.

Characteristics of children ages 6-9:
- The reasoning mind is very important.
- For every answer the children have a question, "Why?"
- By the time they reach the Second Plane, the child achieves a certain degree of independence and will continue to strive for more independence.
- Exploration is another characteristic of this age level and often the child wants to go beyond the usual expectation for their age level.
- The child often turns outward to the broader society and the world beyond herself.
- Friends become increasingly important to children at this age.
- The children sometimes create secret languages.
- The child often becomes more adventurous and daring.
- Some children become "untidy" with personal belongings.
- During this stage of development, the children's conscious becomes "keener"; they develop better ideas of right and wrong, and they often seem to have a better understanding of rules and regulations.
- The hero worship is characteristic of this stage.
- They can have enormous potential of intellect and power of imagination in this stage.

OVERVIEW OF THE LOWER ELEMENTARY LANGUAGE CURRICULUM

Our alphabet has a fascinating history, and it is with the story of "Communication in Signs" that the elementary language program begins. What part did Phoenician merchants play in the development of written symbols? What did the Romans contribute? How is our alphabet different from Chinese characters? These are some of the questions the children may pose for further research after hearing this story. In addition, language is more than a fascinating subject of study in it. It is the vehicle of human communication and the way in which we exchange ideas, thoughts and feelings. Thus, the language curriculum covers in depth written and spoken language, reading, grammar and research, the keys to both self-expression and the acquisition of knowledge.

For Montessori children, writing typically precedes reading. In the primary classroom, children often develop cursive skills, and these, combined with the desire to communicate, lead to many varieties of written composition in the elementary classroom.
In addition to the story of written language, stories about oral language, such as "The Story of Human Speech" and "The History of the English Language," are presented to the children. The teachers use storytelling across the curriculum to convey information. Children are encouraged to discuss and share their ideas with one another and with the larger group. Many choose to share their reports orally, recite poems, and produce plays.

Most children begin reading in the primary classroom. In the elementary program, they continue learning to read and truly begin reading to learn. Books of all literary types are available in the classrooms. Both fiction and non-fiction serve to expand the children's knowledge and awareness. Adults and children read orally and silently throughout the day, and the children develop a love of literature. They discuss shared readings of stories and books, following a seminar format. This involves preparation of the reading and a willingness to listen and discuss, respectfully, ideas about the text.

The study of grammar in the Montessori classroom is unique. Having been introduced to the "function of words" in the primary classroom, elementary children study the parts of speech in more detail. What work does a pronoun do and how is it related to the verb? If its place is changed in the sentence, does the meaning remain the same? Each part of speech has a distinctive, colorful symbol. Children place these symbols above the words of a poem or a prose passage to "see its grammatical structure." Later, they begin to analyze the style of different writers using the grammar symbols.

Lower Elementary children become particularly interested in foreign languages. How do Russians greet each other? How do you say "book" in French? Why is Arabic written from right to left? Have languages changed over time?

Visits to the library give the children opportunities to find out more about language. They learn to use reference materials, and they come to appreciate the library as a source of many kinds of information. Their language research may involve the comparison of works by a particular author, the derivation of idioms, or a multi-cultural study of similar folk tales. Library visits are one of many kinds of language explorations children undertake beyond the classroom.

**LOWER ELEMENTARY LANGUAGE CURRICULUM**

**Written Language**
- The History of Writing
- The Story of Communication in Signs
- Key lessons on the history of writing (pictographs, hieroglyphics, alphabets, printing press)
- Composition
- Imaginative writing
- Stories
- Poems
- Plays
- Factual writing
- Reports (fact gathering, paraphrasing, editing).
- Biographies (interviewing)
- Letter writing
- Mechanics
• Spelling
• Punctuation and capitalization
• Sentence and paragraph formation
• Handwriting
• Letter formation (cursive and manuscript)
• Calligraphy
• Illuminated letters and borders
• Word Processing
• Keyboarding
• Publishing
• Spoken Language

The Story of Spoken Language
• Discussions
• Oral reports
• Recitation of poetry
• Grammar
• Word Study
• Root words and affixes
• Compound words
• Synonyms and antonyms
• Homonyms
• Word families
• Etymologies of words and names
• Vocabulary development
• Parts of Speech
• The noun family (article, adjective, noun)
• The verb (forms, tenses, mood, voice)
• Preposition
• Adverb
• Pronoun
• Conjunction
• Interjection
• Sentence Analysis
• Kinds of sentences (simple, compound, complex)
• Parts of the sentence (subject, predicate, direct and indirect objects)
• Reading
• Mechanics (phonograms and sight words)
• Comprehension
• Words and phrases
• Commands

Interpretive reading
• Total reading (books, periodicals, etc.)
• Oral and silent reading by adults and children
• Literature (prose, poetry, drama, and non-fiction)
• Discussion of shared readings
• Research
• Areas of language research
• History of language
• Comparison of words in different languages
• Study of the works of an author or illustrator

Resources
• Dictionary and thesaurus
• Encyclopedia and other reference materials
• Use of the library
OVERVIEW OF THE LOWER ELEMENTARY MATH CURRICULUM

Mathematics is a human invention that is both a language and a tool. The "Story of Numbers" helps children understand the power of mathematics and motivates them to continue exploring numbers and even to invent their own!

Progression through the Montessori math curriculum is not strictly linear. Instead, Maria Montessori envisioned elementary math as a three-tiered progression. The first tier consists of the numbers to ten, place value, and the four operations. The second tier is dedicated to the memorization of math facts. The third tier is where the children study hierarchy, that is, how the numbers in the decimal system are related and grouped. Initially they work with: numbers from units to millions. Later they learn that the concept of numbers is infinite. The children are free to climb from one tier to another while exploring different concepts of math simultaneously.

Children frequently ask for the biggest problems possible. They also enjoy writing their own BIG problems. The younger children practice using the materials representing whole numbers, fractions and decimals, and through repeated experiences with them, they "discover" algorithms or concepts by themselves or under the guidance of the teacher.

Montessori places great emphasis on the study of geometry, and all the math materials have a geometric aspect. Children in the lower elementary classrooms study lines, angles, and plane figures, as well as linear and cubic measurement. In the upper elementary the children use boxes of cubes and prisms, which they previously manipulated in the primary classroom, to cube a binomial or trinomial. Through their studies, the students are able to discover abstract concepts of algebra, using materials that once were a part of their sensorial experiences only. The upper elementary children also take great delight in further study of different systems of numeration, both those used by ancient civilizations, and other possible systems, such as base two or base twelve.

LOWER ELEMENTARY MATHEMATICS CURRICULUM

The History of Mathematics

- Story of Numbers
- History of number systems (Babylonian, Egyptian, Chinese, Roman, Hindu-Arabic, Mayan.)

Numeration and Concepts of Numbers

- Whole numbers from 1 to 1,000 (sequence and place value)
- Ordinal numbers
- Number lines
- Positive and negative numbers
- Odd and even numbers
- Commutative and associative properties
- Skip counting (by a number to its cube)
- Properties of zero (in addition and subtraction; in multiplication)
- Hierarchies (formation, reading, and writing of numbers to 1,000,000)
- Rounding to the nearest ten, hundred, or thousand
- Estimation
- Expanded notation

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Whole Number Operations
- Memorization of addition and subtraction facts
- Memorization of multiplication and division facts
- Number sentences with missing addends, etc.
- Fact families and inverse operations
- Static and dynamic addition (with a variety of addends; column addition)
- Static and dynamic subtraction (including zeros in the minuend)
- Addition and subtraction of decimals (money)
- Multiplication with one-, two-, and three-digit multipliers
- Division with one-, and two-digit divisors (with remainders)
- Distributive and group division; long division algorithm
- Negative numbers
- Fractions and Decimals
- Fractions from the whole to tenths (quantity and symbol)
- Comparing fractions (> , < , =)
- Equivalence of fractions
- Adding and subtracting fractions with like denominators
- Mixed numbers and improper fractions
- Adding and subtracting fractions with unlike denominators
- Reducing fractions to lowest terms
- Adding and subtracting mixed numbers
- Introduction to fraction multiplication and division
- Decimals from the unit to millionths (quantity and symbol) K. Comparing
decimals (> , < , =)
- Adding and subtracting decimals
- Multiplication and division of decimals by whole numbers
- Multiples and Factors
- Tables of multiples
- Common multiples and the search for the LCM
- The decanomial (geometric and numerical)
- Common factors and the search for the GCF
- Divisibility

Prime numbers
- Powers of Numbers
- Squares and cubes of numbers from 1 to 10 (bead material)
- Notation of powers (exponents)
- Square roots of numbers less than 100
- Squares of binomials and trinomials
- Square of the decanomial
- Square roots of numbers greater than 100
- Powers of Two
- Powers of Three

Measurement
- History of measurement
- English and metric measurement of length, liquid volume, and weight
- Temperature (Fahrenheit and Centigrade)
- Measurement of time (analog and digital clocks; the calendar)
- Money (counting, coin equivalences, making change, etc.)

Geometry
• History of Geometry (Babylonian, Egyptian, Greek contributions, etc.)
• Design elements (metal insets, the geometric cabinet, etc.)
• Use of tools (straightedge, ruler, compass, protractor)
• Symmetry
• Geometry in art and architecture
• Plane Figures
• Point, line, surface, solid

Study of lines
• Study of angles
• Study of plane figures (triangles, quadrilaterals, regular and irregular polygons, closed curved figures)
• Perimeter of plane figures
• Congruence, equivalence, and similarity
• Concept of area
• Computation of area of rectangles, squares, parallelograms

Geometric Solids
• Names, parts, and classification of the geometric solids
• Concept of volume

Finding the volume of rectangular prisms and cubes

Problem-solving
• One- and two-step problems, involving all four operations
• Mental math
• Problems using whole numbers, fractions, and decimals
• Problems applying time, money, and measurement
• Writing original problems
• Reading and making tables and graphs (picture and bar)
OVERVIEW OF THE LOWER ELEMENTARY BIOLOGY CURRICULUM

Plants and animals are an essential part of the elementary environment. Some reside in the classrooms. Others visit. As children obscene and care for these living things, they acquire the experiential basis for their future understanding and love of biology. They further extend their knowledge by going out to wildlife sanctuaries, arboretums, and nature parks to view animals and plants in their natural habitats.

With this foundation, children become interested in studying the wide variety of life forms on our planet. They read, "Who am I" stories about the lives and characteristics of plants and animals. They examine specimens of different invertebrates and vertebrates. They perform plant experiments that demonstrate the basic functions of each part of a plant.

Children study the anatomy, physiology, and classification of living things using classroom resources such as books, card material, and charts. They write reports, ranging in complexity from a simple study of one organism, to a more advanced study of several organisms. Similarities and differences are noted. Although the plant and animal kingdom receive the most attention, all the kingdoms of living organisms are introduced and explored.

Out of the comparative study of life forms, the children make connections between present-day organisms and their predecessors on the Time Line of Life. As conditions on earth changed, organisms that were more complex evolved. In satisfying its needs, each creature seemed to contribute to, or create a niche for, another. As insects evolved, so did flowering plants which created interdependencies which still exist today. Children also see the interaction of living and non-living things in relationship like the lichen that breaks down the rock upon which it lives, creating soil, in which mosses can grow. The interdependence of all things in the universe is stressed, with people being the most powerful living thing, but also the most dependent. An appreciation and sense of wonder unfolds as the harmony of creation is revealed.

LOWER ELEMENTARY BIOLOGY CURRICULUM

- Introduction to biology
- Living/Non-living
- Classification System
- Plant/Animal/Human
- Zoology
- "Who Am I?" animal stories
- Needs of animals and how they are met
- External parts of vertebrates
- Internal functions of vertebrates
- Animal Kingdom charts
- Invertebrates - study of phyla
- Vertebrates - study of classes
- Time Line of Life - study of evolution of animal life in the Paleozoic, Mesozoic, and Cenozoic Eras
Botany
- "Who Am I" plant stories
- Needs of plants and how they are met
- Study of functions and parts of plants
- Functions of roots, stems, leaves, flowers, fruits, and seeds
- Parts and types of roots, stems, leaves, flowers, fruits, and seeds
- Plant Kingdom chart
- Time Line of Life - study of evolution of plants
- Ecology
- Study of biomes and habitats
- Interdependence of living things
- Student research about endangered species
- Student research ways to preserve the natural environment

OVERVIEW OF THE LOWER ELEMENTARY GEOGRAPHY CURRICULUM
Geography, the study of our home, the Earth, opens the door to the elementary curriculum. It sets the stage for an unfolding drama, in many acts, of Earth's story from its inception to its present state. The initial geography lessons are given to the six year olds as exciting stories. Accompanied by scientific demonstrations and impressionistic charts, they strike the child's imagination. They instill in his emergent reasoning mind a desire to embark on an exploration of our world.

We begin with the story of "The Creation of the Universe" to give a vision of the whole. Then we move to more detailed studies of Earth and its place in the universe. Geography is thus fully integrated with the physical sciences. In fact, as the children learn about the Earth and its place in the universe, they form an intellectual framework for all their studies. From the non-living world to the succession of life forms, to human beings and the development of their unique abilities, children study all the sciences and humanities in relation to one another.

Human consciousness comes into the world as a flaming ball of imagination. Everything invented by man, physical or mental, is the fruit of someone's imagination. Maria Montessori called her course of studies for elementary children "cosmic education." There are two principals involved in this concept. First, we always begin with a study of "the whole," which gives the children a unique vision and a holistic foundation for their education. Second, we emphasize that each part of the cosmos is related and contributes to the whole. As the children study geography and other subjects, they become interested not merely in the world and how it functions, but in their individual roles and what part they might play in the continuing story of humanity.

After geography lessons, the children's questions are greeted with enthusiasm. They lead to conversation, experiments, and reading. Research and reports may follow. In this way the children's interest and understanding develop. They actively engage in the study of the sciences, using the resources available within the classroom, around the school environment, and in the community. For example, "the age of volcanoes" section of the creation story often leads to a study of extinct volcanoes and the "Ring of Fire," or it could lead to the study of the rock cycle. Children may initiate further studies beyond the classroom, such as a visit to a natural science museum or an interview with a geology professor. The older children may also plan field studies away from home.
LOWER ELEMENTARY GEOGRAPHY CURRICULUM

Physical Science
- Creation of the Universe (story, charts, experiments)
- Parts of the universe: our solar system and the Milky Way
- Laws of the Universe
- Gravity
- Centripetal and centrifugal force
- Solids, liquids, gases
- Solutions and mixtures

Earth Science
- Relationship of the earth and the sun
- Rotation and revolution of the earth and their effects
- Effects of the perpendicular and oblique rays of the sun
- Solstices, equinoxes, and seasons
- Composition of the earth
- Layers of the earth
- Types of rocks (igneous, metamorphic, sedimentary)
- Plate tectonics
- Mountain formation, volcanoes, and earthquakes
- Types of fossils and the fossil record
- The atmosphere and its work
- Composition of the air and properties of gases
- Winds and ocean currents
- Wind erosion
- The hydrosphere and its work
- The water cycle: evaporation, condensation, precipitation
- Ice and glaciers
- Functions and parts of rivers
- Water erosion

Physical Geography
- Continents and oceans
- Climate and vegetation zones
- Latitude and longitude, time zones
- Definitions and identification of land and water forms
- Political Geography (with an emphasis on cultural studies)
- Countries of the world

Detailed study of the United States

Kentucky

Economic Geography
- Natural resources
- Production and consumption patterns
- Interdependencies

Geography Resources
- Map reading
- Atlas and almanac work
OVERVIEW OF THE LOWER ELEMENTARY HISTORY CURRICULUM

Maria Montessori wished for children to recognize the contributions of great and unknown persons to modern civilization. We thank the inventor of the wheel and the medieval scribes for their contributions to history. According to Dr. Montessori, each child has a significant role to play as contributor to the family and society.

The child's personal sense of time is the starting point for the history curriculum. By noting the passage of days, months, and birthdays, the children develop this awareness of time. Children create personal and family time lines as a precursor to their work with time lines of human history. We also develop a historical sense of time through the Time Lines of Life and Early People, and then the B.C.E./C.E. Time Line. These visual aids, presented with stories, specimens, and artifacts, help the children understand the evolution of life and development of civilizations.

LOWER ELEMENTARY HISTORY CURRICULUM

Introductory Lessons
- The Story of God with No Hands
- The Story of the Coming of Life
- Black Strip and Clock of Eras
- Key lessons on the Time Line of Life

History of Early Human Beings
- Hand Time Line
- First Time Line of Humans
- Second Time Line of Humans
- Study of human evolution

Measurement of Time
- Family time line, personal time line
- Parts of the days of the week, months of the year
- B.C.E./C.E time line

Study
- Great Civilizations
- Fundamental Needs of People
- How one need is met by different civilizations
- How all needs are met in a particular civilization
- Great inventions and contributions to history
- The study and research of great women and men
- History of a particular country