



**Montessori School of Champaign-Urbana  
Curriculum Outline and Expected Outcomes  
Upper Elementary (4th-6th grades)**

\*Individual instructors reserve the right to supplement this list with topics of their own choosing or based on student interest

**Science**

**Cycle Year 1**

**Astronomy**

First great lesson: Big Bang  
Creation stories  
The Life Cycle of Stars  
The Visibility of Stars and Constellations  
Light-Years  
Astronomical tools  
The Solar system  
The Earth and Sun  
Moon, tides, and eclipses  
Asteroids, Comets and meteors  
Human outer space exploration

**Matter and Energy**

Atoms  
Molecules  
Chemical elements and the periodic table  
States of matter  
Changes in matter  
Combinations of matter  
Acids and bases  
Fire and combustion  
Energy sources  
Sound and light  
Electricity and magnetism  
Forces and laws of motion  
Gravity, friction, inertia  
Water and air pressure  
Sound and light

**Scientific Method and Technology**

Scientific techniques  
Science experiments  
Simple machines  
Technologies to meet basic needs  
Engineering Technologies  
Science/technology Projects

- Biography of a scientist (4th years)
- Technology research project (5th/6th)

**Science**

**Cycle Year 2**

**Botany, Mycology, Microscopic Kingdoms**

Relationship between plants, sun, earth, and people  
Nitrogen and Carbon Cycles  
Parts and Function of Plants  
Types of roots, parts of stem, branches, leaves (leaf symmetry), flower, fruit, seeds  
Dissection of a plant  
Plant Charts & Experiments  
Role of plants in erosion control  
Propagation Methods of Plants  
Plants as a food source, food systems  
Microscopic Kingdoms  
Tools to study microorganisms  
Bacteria experiments  
Scale models of viruses / bacteria  
Pathogen project  
Protists project  
Fungi types and dissection  
Garden planning project  
The carbon and nitrogen cycles

**Zoology**

Classification of animals  
Invertebrates animal report  
Insects / arachnids  
Vertebrates  
Internal and external characteristics  
Animal adaptations  
Food webs and chains  
Owl pellet and/or animal dissection  
Environmental project  
Human body systems: skeletal, muscular, digestive, excretory, respiratory, circulatory, nervous

**History**

**Cycle Year 1**

**World History**

**Prehistory and Ancient Civilizations**

Common needs of early people  
Early Cultures and societies  
Archeology  
Human needs in ancient civilizations  
Ancient civilization reports, projects, and presentations

**The Post-Classical Period (500-1500 CE) project**

Europe  
Middle East  
Asia  
Oceania  
South America

**The Early-Modern Period (1500-1800 CE) project**

Europe  
Middle East

Asia  
Oceania  
South America

## **History**

### **Cycle Year 2**

#### **Prehistory - 1600**

Indigenous peoples  
Vikings

#### **The Age of Exploration**

Early Explorers

#### **1600 - 1865**

Jamestown and Plymouth Colony

13 colonies

Native Americans and Colonists

American Revolution

Declaration of Independence

Westward Expansion

The War of 1812

The Slave Trade and Abolition Movement

The Civil War

#### **1865 - 1917**

Technological and Social Changes

Science Innovations and Inventors

Women's Suffrage movement

US Involvement in WWI

#### **1918 - 1945**

Events Between the Wars

US Involvement in WWII

#### **1945 - 2001**

US Government and electoral process

Freedoms, rights, responsibilities

Immigrants in the US

Illinois and local history

## **Geography**

### **Cycle Year 1**

#### **Earth's Lithosphere**

Earth's layers

Tectonic plates

Volcanoes and the Ring of Fire

Earthquakes

Continents, islands, coastlines

Mountains, valleys, plains

Rocks and minerals

The rock cycle

Weathering and erosion

## **Geography**

### **Cycle Year 2**

#### **Earth's Atmosphere**

Weather vs. climate

Types of weather

Types of clouds

Instruments to measure weather and data recording

The Greenhouse Effect

Wind currents

#### **Earth's Hydrosphere**

The water cycle

Water and its effects on Earth's surface

Watersheds

Ocean zones

#### **Biomes of the earth**

Types of biomes

Ecosystems

Biotic vs. abiotic elements

Food webs

#### **Both cycle years**

#### **Political geography**

The 7 continents

US map with state capitals

Countries of the world

States/provinces

Government systems

Economic systems

#### **Human health**

Nutrition

Healthy relationships

Emotional health

Puberty changes (Body and brain)

## **Language**

### **4th grade**

#### **Spoken language**

- Listens and responds to read aloud discussions
- Recites poetry aloud for an audience
- Uses grace and courtesy to challenge/question another point of view

#### **Reading comprehension and literature**

- Predicts text meaning using clues such as title, cover, summary, chapters, and illustrations
- Uses strategies to comprehend words, phrases, and sentences
- Able to understand implied or inferred meaning in text
- Able to sequence and prioritize main events in text
- Identifies Question Answer Relationships (QARs)
- Experiences a wide variety of literature
- Chooses books for own enjoyment at an appropriate reading level
- Understands following elements: setting, characters, plot, dialogue, theme, moral/lesson

#### **Word structure/vocabulary**

- Studies commonly used suffixes and prefixes and their meanings
- Studies commonly used homonyms and can differentiate between spellings and meanings
- Uses the dictionary to expand vocabulary in speech and writing
- Increases knowledge of synonyms
- Chooses words for effects and meaning

## **Parts of speech, Verb tenses, sentence analysis**

- Positive, comparative, superlative
- Concrete and abstract nouns
- Collective nouns
- Possessive nouns to show ownership
- Identifying pronouns in subject and direct object
- 1st, 2nd, 3rd person pronoun classification
- Using conjunctions to show comparison
- Using conjunctions to joins parts of a sentence
- Regular and irregular verbs
- Simple and perfect verb tenses: past, present, future
- Correct agreement of pronoun and verb
- Subject/predicate/direct object/indirect object

## **Punctuation and writing**

- Semicolon
- Colon
- Quotation marks
- Commas
- Parenthesis
- Friendly letter
- Thank you letter
- Field notes
- Captions
- Simple instructions
- Summarizing
- Paragraph form
- Prewriting organization strategies
- Paragraph: intro sentence, body, closing sentence
- Figures of speech: simile, onomatopoeia, alliteration

## **Research skills**

- Choosing appropriate resources
- Table of contents, index, glossary
- Pictures, photographs, diagrams, captions
- Identify key words/phrases
- Skims text for main ideas
- Scans text for detailed information

## **5th grade**

### **History of language**

- Study of first words and language
- Research invention of paper and writing
- The importance of language

### **Spoken language**

- Conducts interviews with classmates and other familiar people
- Listens for key ideas and details
- Dialogue in dramatic performances
- Note taking from simple spoken presentations

### **Reading comprehension and literature**

- Note taking
- Graphic organizers
- Drawn diagrams

- Forming opinions based on and supporting with evidence from text
- Composing QARs— “in the text” questions
- Verbal and written summaries
- Form opinion of author and illustrator style
- Research and discussion of historical background of text

## **Parts of speech, verb tenses, sentence analysis**

- Qualitative and descriptive adjectives
- Nominative pronouns
- Demonstrative pronouns
- Interrogative pronouns
- Possessive pronouns
- Sentence analysis: adverbials
- Prepositional phrase at the end of a sentence
- Prepositional phrase in a sentence
- Prepositional phrase in a quotation
- Progressive tenses: past, present, future
- Past participle
- Using attributes in a sentence
- Verb phrase in the predicate

## **Punctuation and writing**

- Uses punctuation correctly in daily writing
- Identifies and corrects missing or incorrect punctuation
- Uses transition words or phrases between paragraphs
- Proofreading for capitalization, punctuation, spelling
- Writing process: planning, rough draft, final draft
- Figures of speech: Metaphor, personification
- Business letter
- Opinion writing
- News article

## **Research skills**

- Writing factual descriptions
- Identifying information sources
- Writing reports

## **6th grade**

### **History of language**

- How languages change
- Language families
- Etymology of words

### **Spoken language**

- Recites original poetry or creative writing with correct tone, speed, and heeds punctuation
- Discussion and debates; argues for a point of view
- Explaining complex concepts

### **Reading comprehension/literature**

- Conducts independent literature group meetings
- Composing QARs— “In my head” questions
- Multi-paragraph summary writing

## **Word Structure, vocabulary**

- Researches word/spelling root patterns
- Researches word derivatives
- Personal “dictionary” of new vocabulary
- Pronunciation symbols

## **Verb tenses and sentence analysis**

- Correct agreement of pronoun and verb
- Regular and irregular verb forms: past and present participles
- Present, past, future perfect tense
- Progressive tenses
- Linking verbs
- Compound sentences
  
- Compound sentences using coordinating conjunctions

## **Punctuation and writing**

- Punctuation of clarity in writing and structure: semicolon, colon, quotation marks, commas, parenthesis, hyphen
- Multi-paragraph research paper
- Screenplay/script writing
- Capstone project

## **Research skills**

- Interviews professionals in a field of study related to their research
- Identifies reputable vs. questionable internet sources
- Recognizing fact vs. opinion
- Completes a multi-page research paper
- Capstone project

## **Math**

### **4th and 5th Grade**

#### **Operations and place value**

- Expanded notation to the hundred thousands place
- Roman numerals
- Dynamic addition and subtraction to the hundred thousands place
- Multiplication facts
- Dynamic multiplication, single digit multiplier
- Division facts
- Long division, single digit divisor
- Multiples, divisors
- Prime factorization
- Rounding to the nearest 10, 100, 1,000
- Comparing decimals to fractions
- Adding, subtracting, multiplying decimals
- Adding subtracting, multiplying quantities of US money with a decimal point

#### **Graphing and measurement**

- Ordered pairs
- Bar graphs
- Writing digital time
- Metric system conversions

#### **Fractions**

- Adding and subtracting fractions with like denominators
- Multiplying fractions by a whole number
- Adding and subtracting fractions with unlike denominators
- Reducing to lowest terms

#### **Geometry**

- Perimeter of polygons
- Area of polygons
- Volume of cubes
- Angle types (acute, right, obtuse, straight, whole, reflex)
- Congruent and supplementary angles
- Parts of a triangle (base, height, vertex, side)
- Parts of a circle (radius, diameter, circumference, arc, chord, segment)
- Lines and curves (straight vs. curved, line vs. segment, perpendicular lines, parallel lines, intersecting lines, ray, angle)
- Polygon congruence, similarity, equivalence

### **6th-8th Grade**

#### **Operations and place value**

- Expanded notation to the millions place
- Dynamic addition and subtraction to the millions place
- Dynamic multiplication, double digit multiplier
- Long division, double digit divisor
- Converting decimals to fractions, fractions to decimals
- Adding, subtracting, multiplying decimals
- Comparing negative and positive integers
- Adding, subtracting negative and positive integers
- Rounding and estimating
- Binomials and trinomials

#### **Graphing and measurement**

- Ordered pairs
- Set theory, venn diagrams (union, intersection, disjoint)
- Metric system conversions and study of units of measurement

#### **Fractions, ratios, proportions, etc.**

- Multiplying fractions with unlike denominators
- Dividing fractions by decimals and whole numbers
- Converting fractions to decimals
- Converting division of fractions to multiplication of fractions
- Calculating average/mean
- Converting percents to fractions and decimals
- Method of proportions to find equivalent percent of fractions
- Formulas and equations
- Square roots, powers
- Decimals in power form
- Comparing proportions
- Cross-product method to solve proportions
- Rewriting ratios in proportion form with means and extremes

- Opposite value of rational numbers

## **Geometry**

- Perimeter of polygons
- Area of polygons
- Volume of 3-D shapes
- Angle types (acute, right, obtuse, straight, whole, reflex)
- Calculating congruent and supplementary angles
- Parts of a triangle calculations (base, height, vertex, side)
- Parts of a polygon calculations (apothem, diagonal, base, side)
- Sum of angles of plane figures
- Parts of a circle calculations (radius, diameter, circumference, arc, chord, segment)
- Lines and curves (straight vs. curved, line vs. segment, perpendicular lines, parallel lines, intersecting lines, ray, angle)
- Circumference relationships (concentric, secant, tangent, external, internal)

## **Algebra**

- Operations on integers
- Equations
- Polynomials
- Rational numbers
- Multiplying and dividing rational expressions
- Adding and subtracting rational expressions
- Graphs
- Systems of equations
- Square roots and quadratic equations