# 7-12 SCIENCE

LIBRARY COLLECTION DEVELOPMENT

LAMP 2017 Workshop



# Elizabeth Simmons, Staff Officer III

Office of Elementary Education and Reading *Library and Reading Fair* 

# **Mississippi Department of Education**

# **VISION**-

To create a world-class educational system that gives students the knowledge and skills to be successful in college and the workforce, and to flourish as parents and citizens

# **MISSION**

To provide leadership through the development of policy and accountability systems so that all students are prepared to compete in the global community



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# School Library Program Vision

To create collaborative relationships between school librarians and classroom teachers which transforms the school library program into a support system that strengthens the curriculum by bridging the informational literacy gap.



# **Collection Guidelines** SLG Section 4.4

Collection guidelines are important for the systematic development and maintenance of the library's print, media, and electronic collections so that the holdings of the school library supplement, enrich, and support the needs of its patrons.

	Fiction	Nonfiction
Elementary (PreK-5)	50%	50%
Middle (6-8)	45%	55%
High (9-12)	30%	70%



Colle	llection Guidelines Dewey Recommendation			
		Elementary	Middle	High
00	00	.5%	1%	1%
1(	00	.5%	1%	1%
20	00	1%	1%	1%
30	00	8%	10%	11%
40	00	1%	1%	1%
50	00	11%	9%	7%
60	00	5%	7%	6%
70	00	5%	5%	6%
80	00	4%	5%	10%
MISSISSIPPI DEPARTMENT OF EDUCATION 90	00	7%	13%	11%

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# **Collection Guidelines** Dewey Recommendations

	Elementary	Middle	High
General Fiction	23%	26%	15%
Reference	3%	9%	18%
Biography	6%	10%	9%
Professional	3%	1%	2%
Story Collection	0%	1%	1%
Easy	23%	0%	0%

Easy needs to match with the needs of your students. If you have a large amount of students reading below grade level, then you should have some Easy books in your collection. Professional Collection should coincide with Standard 15 regarding Professional Development. This collection should reflect the current professional development needs of the school.



# Seventh - Eighth Grade Standards





# Seventh Grade Life Science

# Core Idea: Ecology and Interdependence

Students will demonstrate an understanding of the importance that matter cycles between living and nonliving parts of the ecosystem to sustain life on Earth.



# Seventh Grade Physical Science

# Core Idea: Organization of Matter and Chemical Interactions

Students will demonstrate an understanding of the physical and chemical properties of matter.

Students will demonstrate an understanding about the effects of temperature and pressure on physical state, molecular motion, and molecular interactions.

Students will demonstrate an understanding of the proper use of the periodic table to predict and identify elemental properties and how elements interact.

Students will demonstrate an understanding of chemical formulas and common chemical substance to predict the types of reactions and possible outcomes of the reactions.



# Seventh Grade Earth and Space

# Core Idea: Earth's Systems and Cycles

Students will demonstrate an understanding of how complex changes in the movement and patterns of air and water molecules caused by the sun, winds, landforms, ocean temperatures, and currents in the atmosphere are major determinants of local and global weather patterns.

Students will demonstrate an understanding of the relationship between natural phenomena, human activity, and global climate change.

Students will demonstrate an understanding that seasons are the direct result of the Earth's tilt and the intensity of sunlight on the Earth's hemispheres.



# Seventh Grade Print Resources







### Seventh Grade Digital Resources **MAGNOLIA** $\implies$ KidsClick $\implies$ Science and Math Q7('U) KidsClick, KidsClick is maintained The Freedom to Explore! by the School of Library ence Or go to these specific subjects: Science (General) Science Museums Science Experiments Biographies of Scientists Science TV & Radio Shows Science TV & Radio Shows Cell Science Coll KidsClicks! Science and Information Go to these sub-menus: Animals Amphibians, Bears, Endangered Species, Mammals (General), Reptiles, Zoos, more... Science at Kent State University. Natural Disasters Natural Disasters (General), Earthquakes, Hurricanes, Tornados, Volcanoes The Environment Earth Day, National Parks, Recycling, Solar Energy, Toxic Waste, more... Math Math Games, Arithmetic, Geometry, Measurement, more... Space Apollo Program, Mars, NASA, Planets, Space Shuttle, Sun, more... Energy (General) Geons Geology Optical Illusions Physics Rocks Sand Snow Sounds Time Weather (Meteorology) MISSISSIPPI EDUCATION 14 it future for every child

# Seventh Grade Library Skill

# Students use information.

The student will organize, synthesize, create, and communicate information.

- Demonstrate ethical, legal, and safe use of information in print, media, and online resources.
- Draw conclusions and make informed decisions.
- Use information and technology to creatively answer a question, solve a problem, or enrich understanding.



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# Eighth Grade Theme

# **Cause and Effect**

Explaining patterns and making predictions based on an understanding of cause and effect allows students to conceptualize and describe the relationships among natural phenomena.



# Eighth Grade Life Science

# Core Idea: Reproduction and Heredity

Students will demonstrate an understanding of how sexual reproduction results in offspring with genetic variation while asexual reproduction results in offspring with identical genetic information.

Students will demonstrate an understanding of the differences between inherited and acquired characteristics and how environmental factors and the use of technologies influence the transfer of genetic information.

# Core Idea: Adaptation and Diversity

Students will demonstrate an understanding of the processes of natural selection, in which variations in a population increase some individual's likelihood of surviving and reproducing in a changing environment.



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# Eighth Grade Physical Science

### Core Idea: Motions, Forces, and Energy

Students will demonstrate an understanding of the properties, behaviors, and application of waves.



# Eighth Grade Earth and Space

# Core Idea: Earth's Systems and Cycles

Students will demonstrate an understanding that physical processes and major geological events are powered by the Sun and the Earth's internal heat and have occurred over millions of years.

Students will demonstrate an understanding of natural hazards and construct explanations for why some hazards are predictable and others are not.

### Core Idea: Earth's Resources

Students will demonstrate an understanding that decrease in natural resources is directly related to the increase in human population on Earth and must be conserved.







# Eighth Grade Digital Resources

# **MAGNOLIA** $\implies$ Explora $\implies$ Science and Math $\implies$ Ecosystems



**Explora** connects with EBSCOhost database to find videos, periodical articles, and reference books. **Explora** allows teachers and students to select articles and reference materials based on reading levels and publication dates.

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# Eighth Grade Library Skill Students access information. The student will access information by applying knowledge of the organization of libraries, print materials, digital media, and other sources. Formulate appropriate questions: Generate research questions based on interests, observations, 0 information, stories, and issues or on an assigned topic. Develop and present a clear thesis statement or hypothesis. Ο Finalize the research question or hypothesis by conducting Ο preliminary research. MISSISSIPPI EDUCATION 22



# **Research Recommendations**

The recommendation is that students should be actively engaged in inquiry activities, lab experiences, and *scientific research (projects)* for a minimum of 30% of class time.



# Ninth-Twelfth Grade Library Skills Students access information by applying knowledge of the organization of libraries, print materials, digital media, and other sources. Recognize the need for information. Formulate appropriate questions. Identify and locate a variety of resources online and in other formats by using effective search strategies. Retrieve information in a timely, safe, and responsible manner.

# Ninth-Twelfth Grade Library Skills

# Students evaluate information.

The student will evaluate and analyze information to determine what is appropriate to address the scope of inquiry.

- Determine the relevance of the information.
- Assess the comprehensiveness, currency, credibility, authority, and accuracy of resources.
- Consider the need for additional information.
- Retrieve information in a timely, safe, and responsible manner.

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# Ninth-Twelfth Grade Library Skills

# Students integrate information literacy skills into all area of learning.

The students will independently pursue information to become a lifelong learner.

- Read widely and use various media for information, personal interest, and lifelong learning.
- Seek, produce, and share information.
- Appreciate and respond to creative expressions of information.





# Ninth-Twelfth Grade Digital Resources

# MAGNOLIA ➡ Explora ➡ Sciences and Math

### AGRICOLA

Bibliographic records from the U.S. Department of Agriculture's National Agricultural Library, covering all aspects of agriculture and allied disciplines, including animal and veterinary science, plant science, forestry, farming, and more.

### **Consumer Health Complete**

Full text content covering all areas of health and wellness from mainstream medicine to the many perspectives of complementary, holistic and integrated medicine. Topics include aging, cancer, diabetes, drugs and alcohol, fitness, and more.

### **Environment Complete**

Deep coverage in applicable areas of agriculture, ecosystem ecology, energy, renewable energy resources, natural resources, marine & freshwater science, geography, pollution & waste management, environmental technology, environmental law, public policy, social impacts, urban planning, and more.

### GreenFILE

Well-researched information on all aspects of human impact to the environment, including content on global warming, green building, recycling, and more.





# **Biology** Core Ideas

**Core Idea: Cells as a System** Students will demonstrate an understanding of the characteristics of life and biological organization.

### Core Idea: Energy Transfer

Students will explain that cells transform energy through the processes of photosynthesis and cellular respiration to drive cellular functions.

### Core Idea: Reproduction and Heredity

Students will develop and use models to explain the role of meiosis in the production of haploid gametes required for sexual reproduction.

### Core Idea: Adaptations and Evolution

Students will demonstrate an understanding of the ways animals adapt to their environment in order to survive.

### Core Idea: Interdependence of Organisms and their Environment

Students will demonstrate an understanding of the ways animals adapt to their environment in order to survive.







# Botany Core Ideas

# Core Idea: Plant Morphology, Cell Structure, and Function

Students will investigate the morphology, anatomy, and physiology of plants.

### **Core Idea: Plant Evolution**

Students will identify evolutionary modifications necessary for the terrestrial survival of plants.

# Core Idea: Plant Reproduction

Students will characterize the reproductive strategies of plants.



# **Botany** Core Ideas

### Core Idea: Society's Reliance on Plants

Students will explore the global value of plants and the interaction between humans and plants.

*Core Idea: Plant Adaptations to Varying Habitats* Students will explore adaptations that allow plants to survive in various habitats.

### Core Idea: Local Plant Investigations

Students will ask questions, plan, and conduct field investigations on local plant communities.







# Chemistry Core Ideas

## Core Idea: Mathematical and Computational Analysis

Students will use mathematical and computational analysis to evaluate problems.

### Core Idea: Atomic Theory

Students will demonstrate an understanding of the atomic structure and the historical developments leading to a modern atomic theory.

### Core Idea: Periodic Table

Students will demonstrate an understanding of the periodic table as a systematic representation to predict properties of elements.

### Core Idea: Bonding

Students will demonstrate an understanding of the types of bonds and resulting atomic structures for the classification of chemical compounds.



### Core Idea: Naming Compounds

Students will investigate and understand the accepted nomenclature used to identify the name and chemical formulas of compounds.

# **Core Idea: Chemical Reactions**

Students will demonstrate an understanding of the types, causes, and effects of chemical reactions.

# *Core Idea: Gas Laws* Students will demonstrate an understanding of the structure and behavior of gases.

### **Core Idea: Solutions**

Students will demonstrate an understanding of the nature of properties of various types of chemical solutions.



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# Earth and Space Theme

Provides opportunities for students to continue to develop and communicate a basic understanding of the Earth and its place in the universe through lab-based activities, integrated STEM activities, inquiry, mathematical expressions, and concept exploration. Earth and space science will help students apply scientific concepts in natural settings and guide them to become responsible stewards of Earth's natural resources.



# Earth and Space Core Ideas

### Core Idea: Earth in the Universe

Students will develop an understanding of the universe, its development, immense size, and composition.

### Core Idea: Earth Structure and History

Students will develop an understanding of the structure and composition of Earth and its materials.

# Core Idea: Earth's Systems and Cycles

Students will develop an understanding of Earth's systems and cycles.

### Core Idea: Earth's Resources and Human Activity

Students will develop an understanding of Earth's resources and the impact of human activities.





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# Environmental Core Ideas

# Core Idea: Biosphere and Biodiversity

Students will investigate the interdependence of diverse living organisms and their interactions with the components of the biosphere.

# Core Idea: Natural Resources Use and Conservation

Students will relate the impact of human activities on the environment, conservation activities, and efforts to maintain and restore ecosystems.

# Core Idea: Human Activities and Climate Change

Students will discuss the direct and indirect impacts of certain types of human activities on the Earth's climate.

# Core Idea: Human Sustainability

Students will demonstrate an understanding of the interdependence of human sustainability and the environment.







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# Human A&P Theme

A laboratory-based course that investigates the structures and functions of the human body. Core content emphasizes the structure and function of cells, tissues, and organs; organization of the human body and its biochemical composition; the skeletal, muscular, nervous, endocrine, digestive, respiratory, cardiovascular, integumentary, immune, urinary, and reproductive systems; and the impact of diseases on certain systems.



# Human A&P Core Ideas

# Core Idea: Physiological Functions/Anatomical Structure

Students will demonstrate an understanding of how anatomical structures and physiological functions are organized and described using anatomical position.

# Core Idea: Cells and Tissues

Students will demonstrate an understanding of the relationship of cells and tissues that form complex structures of the body.

### Core Idea: Systems

Students will investigate the structures and functions of the systems, including the cause and effect of diseases and disorders.





# Marine and Aquatic Theme

A laboratory-based course that investigate the biodiversity of saltwater and freshwater organisms, including their interactions with the physical and chemical environment. Science and engineering practices, crosscutting concepts, nature of science, and technology are incorporated into the standards. Special emphases relating to human impacts and career opportunities are integral components of this course.



# Marine and Aquatic Core Ideas

### Core Idea: Water Properties and Quality

Students will develop an understanding of the unique physical and chemical properties of water and how those properties shape life on earth.

### Core Idea: Fluid Dynamics

Students will develop an understanding of the principles of fluid dynamics as it relates to both salt and freshwater systems.

### **Core Idea: Geological Features**

Students will understand the principles of plate tectonics, seafloor spreading, and physical features of oceanic zones.



# Marine and Aquatic Core Ideas

## Core Idea: Flora and Fauna

Students will examine characteristics of specific aquatic ecosystems and the effects of human and natural phenomena on those ecosystems.

*Core Idea: Primary Producers* Students will explore the biodiversity and interactions among aquatic life.

### *Core Idea: Invertebrate Consumers* Students will investigate characteristics of aquatic invertebrates.

### *Core Idea: Vertebrate Consumers* Students will investigate characteristics of aquatic vertebrates.





# Physical Science Theme

Provides opportunities for students to develop and communicate a basic understanding of physics and chemistry through lab-based activities, integrated STEM activities, inquiry, suitable mathematical expressions, and concept exploration.



# Physical Science Core Ideas Core Idea: Nature of Matter Students will demonstrate an understanding of the nature of matter. Core Idea: Atomic Theory Students will demonstrate an understanding of both modern and historical theories of atomic structure. Core Idea: Periodic Table Students will analyze the organization of the periodic table of elements to predict atomic interactions. Core Idea: The Law of Conservation of Matter and Energy Students will analyze changes in matter and the relationship of these changes to the law of conservation of matter and energy. MISSISSIPPI EDUCATION

# Physical Science Core Ideas

Core Idea: Newton's Law of Motion Students will analyze the scientific principles of motion, force, and work.

### Core Idea: Waves

Students will explore the characteristics of waves.

### Core Idea: Energy

Students will examine different forms of energy and energy transformations.

### Core Idea: Thermal Energy

Students will demonstrate an understanding of temperature scales, heat, and thermal energy transfer.

### Core Idea: Electricity

Students will explore basic principles of magnetism and electricity (e.g., static electricity, current electricity, and circuits).







# Physics Core Ideas

*Core Idea: One-Dimensional Motion* Students will investigate and understand how to analyze and interpret data.

### Core Idea: Newton's Law

Students will develop an understanding of concepts related to Newtonian dynamics.

### Core Idea: Work and Energy

Students will develop an understanding of concepts related to work and energy.

*Core Idea: Waves* Students will investigate and explore wave properties.

*Core Idea: Electricity and Magnetism* Students will investigate the key components of electricity and magnetism.

### Core Idea: Nuclear Energy

Students will demonstrate an understanding of the basic principles of nuclear energy.



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# Zoology Theme

Laboratory-based courses that survey the nine major phyla of the Kingdom Animalia. Morphology, taxonomy, anatomy, and physiology are investigated. Comparative studies are addressed during laboratory observations and dissections. Laboratory activities, research, the use of technology, and the effective communication of results through various methods are integral components of this course.



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# Zoology Core Ideas

# Core Idea: Evolution

Students will develop a model of evolutionary change over time.

### Core Idea: Phyla Porifera and Cnidaria

Students will understand the structure and function of phylum Porifera and phylum Cnidaria and how each adapts to their environments.

### Core Idea: Phylum Mollusca

Students will understand the structure and function of phylum Mollusca, and how they adapt to their environments.

# Core Idea: Phyla Platyhelminthes, Nematoda, and Annelida

Students will describe the evolution of structure and function of phylum Platyhelminthes, phylum Nematoda, and phylum Annelida.

### Core Idea: Phylum Arthropoda

Students will understand the basic structure and function of phylum Arthropoda, and how they demonstrate the characteristics of living things.



# Zoology Core Ideas

### Core Idea: Phylum Echinodermata

Students will understand the structure and function of phylum Echinodermata, and how they demonstrate the characteristics of living things.

### Core Idea: Phylum Chordata, Classes Chondrichthyes and Osteichthyes

Students will understand the structure and function of phylum Chordata, classes Chondrichthyes and Osteichthyes, and how they demonstrate the characteristics of living things.

### Core Idea: Phylum Chordata, Classes Amphibia and Reptilia

Students will understand the structure and function of phylum Chordata, classes Amphibia and Reptilia, and how they demonstrate the characteristics of living things.

### Core Idea: Phylum Chordata, Class Aves

Students will understand the structure and function of phylum Chordata, class Aves, and how they demonstrate the characteristics of living things.





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# How to build a quality collection

- 1) Evaluate the current science collection using the keywords or terms listed in the CCRS Science School Library Collection Development
- 2) Have teachers evaluate the current print and nonprint collection using the Collection Evaluation Form (Section 4.4)
- Check the age of the current science collection using the Dewey Decimal Age Ranges (Section 4.5)
- 4) Develop a budget to "rebuild" the science collection if necessary (Section 6.2)
- 5) Collaborate with teachers on when when library resources and materials are needed (Section 2.3)



Library informatic	n					
Grade Level:	Grade Level:			Number of Students:		
Current Collection Copyright Age:		Current Collection Total Items:				
Collection Reviewer:				Collection Reviewed:		
Please answer YES or No comments or explanation information should be incl	O to the questions in the table be on the bottom and/or back of thi ude on the library monetary con	elow for each collection listed. It is form. Librarian should work w sideration.	f any collection was not review ifth teachers, students, and ad	ed or is not applicable, please ministrators to help fill the gar	write N/A. Include any s in the collection. This	
Collections	Are materials up to date?	Are materials used by faculty?	Are materials used by students?	Are there gaps in subject coverage?	Are scholastic levels appropriate for student learning levels?	
Non-fiction Books						
Reference Books						
Periodicals						

1	i-books			
1	iction Books			
	Professional Sollections			
1	teview is for: Annual Collection Evaluation	Particular Curriculum Ass e following:	ignments	
	recommend the withdrawal of items on the attached recommend additional resources in the subject are	ed list eas on the attached list		
1	ummary of Evaluation Findings:			



# **School Library Listserv**

To subscribe, send a message to <u>esimmons@mdek12.org</u> with "subscribe library" as the subject of the email.

Please include name, role, and name of school and district.





# **Contact Information**

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