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OFFICE OF PUBLIC INSTRUCTION
STATE OF MONTANA

Putting Montana Students First

# Computer Science, Library Media and Technology Content Standards Negotiated Rulemaking Committee Agenda

| | |
|---|---|
| When: | January 10, 2020 |
| Time: | 9:30 a.m. to 4 p.m. |
| Where: | Capitol Building, Rm 137, Helena, MT 59601 |
| Lunch: | On your own |

Committee members are welcome to arrive at 9 a.m. to check computer or device connectivity.

Lunch break, on your own, at approximately 12:00 p.m.

The Committee will move through the agenda as needed.

9:30 a.m. Call to Order

Review Negotiated Rulemaking roles, responsibilities, and process

Proposed rule changes

- Complete Computer Science Discussion
- Technology Integration
- Library Media/Information Literacy

Economic Impact Survey Questionnaires

Next NR Committee meeting date: February 12, 2020

Public comment

4 p.m. Adjourn

*All comments received become part of the official public record of the Negotiated Rulemaking Committee proceedings in accordance with §2-3-212, MCA.*

# NEGOTIATED RULEMAKING COMMITTEE

Computer Science, Library Media/Information Literacy, and Technology Integration

Content Standards Revision

January 10, 2020

Putting Montana Students First

OFFICE OF PUBLIC INSTRUCTION
ELSIE ARNTZEN, STATE SUPERINTENDENT
OPI.MT.GOV

# PUBLIC MEETING

All comments received become part of the official public record of the Negotiated Rulemaking Committee proceedings in accordance with MCA 2-3-212.

This meeting is being recorded and streamed via MPAN.

Please use the microphone whenever you are speaking.

Remote participants are joining this meeting via conference call.

# MEETING AGENDA

**Call to Order**

- Housekeeping
- Review Process and Guidelines

**Proposed Rule Changes**

- Complete Computer Science Discussion
- Technology Integration

**Lunch**

**Proposed Rule Changes**

- Technology Integration (continued)
- Library Media / Information Literacy

**Economic Impact Survey Questionnaire**

**Negotiated Rulemaking Timeline**

**Public Comment**

**Adjourn**

# HOUSEKEEPING

- Restrooms and Breaks
- Connectivity Check/ Device Setup
- Committee Agenda Packet
- Lunch break at 12 p.m.
- Work Session concludes at 4 p.m.

# CALL TO ORDER

# ROLES AND RESPONSIBILITIES

## Committee Members

- review drafts prepared by the revision team to provide feedback and a recommendation to the Superintendent on the draft
- assist in determining the economic impact of the draft

## OPI and BPE Staff

- support the work of the committee

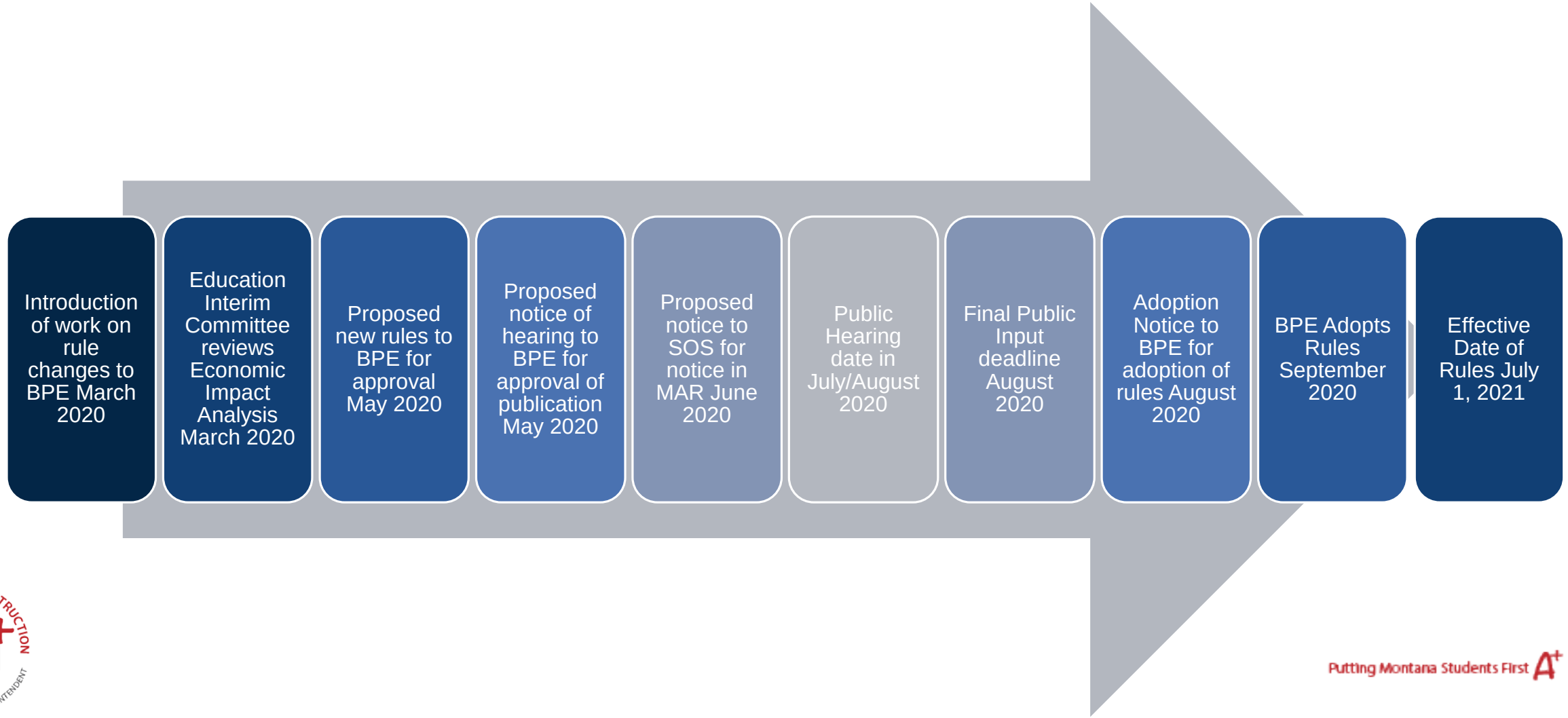
# PROCESS

## Where are WE?

- Montana Constitution
- Montana Code Annotated (Legislature)
- ★ Administrative Rules of Montana (OPI→**NR Committee**→OPI→BPE)
- Policy (School Trustees)
- Procedure (School Administrator)

# NRC PROPOSED TIMELINE

# MAPA PROPOSED TIMELINE



# BACKGROUND AND CONTEXT FOR RULE CHANGE

**The Board of Public Education sets forth the following guidelines for content standards revision:**

- Standards will define what all students should know and be able to do;
- Standards will be challenging and rigorous;
- Standards will be clear, understandable, and free of jargon;
- Standards will be measurable;
- Standards will address diversity, specifically fulfilling the commitment to implementing Indian Education for All;
- Standards will be consistent with the grade level and grade band structures in ARM Chapter 53; and
- Content standards will be consistent with the program delivery standards described in ARM Chapter 55.

# BACKGROUND AND CONTEXT FOR RULE CHANGE

With the purpose of engaging in a transparent and inclusive process, the Board of Public Education sets forth the following considerations for the Office of Public Instruction to incorporate when recommending standards revision:

- comments and recommendations from the Montana public;
- international, national, and other states' standards;
- implications for program delivery standards (ARM Chapter 55) and licensure standards (ARM Chapter 57);
- implications for local and state assessments;
- entrance expectations for the workplace and post-secondary education;
- student achievement and other related data;
- other evidence-based practices and research on standards and learning expectations from regional, national, and international professional education organizations;
- comments from Montana's professional education associations;
- comments from tribal and school district educators;
- comments from Montana's institutions of higher education and the Office of the Commissioner of Higher Education; and
- recommendations from the Montana Advisory Council for Indian Education and Certification Standards and Practices Advisory Council.

# BACKGROUND AND CONTEXT FOR NEW COMPUTER SCIENCE RULES

**Computer science skills are necessary for college and career readiness**

- Today's and tomorrow's jobs require computational thinking, programming, and problem solving skills

**Organized by grade level for K-5 and by grade band for 6-8 and 9-12**

- Grade level standards for K-5 clarify learning expectations for elementary teachers who teach in all content areas
- Grade band standards for 6-8 and 9-12 clarify expectations and allow for flexibility of program delivery

**Integration of Indian Education for All**

**Progression of skills and content from K-12**

# BACKGROUND AND CONTEXT FOR RULE CHANGES TO TECHNOLOGY INTEGRATION

Current technology content standards were adopted in 2008

- Program delivery standards (Ch 55) were not proposed or adopted

Organized by grade level for K-5 and by grade band for 6-8 and 9-12

- Grade level standards for K-5 clarify learning expectations for elementary teachers who teach in all content areas
- Grade band standards for 6-8 and 9-12 clarify expectations and allow for flexibility of program delivery

Integration of Indian Education for All

Emphasis on technology integration across content and contexts

# BACKGROUND AND CONTEXT FOR RULE CHANGES TO LIBRARY MEDIA

Current Library Media/Information Literacy content standards were adopted in 2008

- Program delivery standards (Ch 55) were not updated in 2008

Organized by grade level for K-5 and by grade band for 6-8 and 9-12

- Grade level standards for K-5 clarify learning expectations for elementary teachers who teach in all content areas
- Grade band standards for 6-8 and 9-12 clarify expectations and allow for flexibility of program delivery

Integration of Indian Education for All

Emphasis on the skills students need to be information literate in any information or problem solving environment

# PROPOSED RULE CHANGES

A thumb held up indicates that I understand and am in agreement with the proposal.

A thumb held sideways indicates that I do not understand the proposal.

A thumb held down indicates that I understand and do not agree with the proposal.

# DRAFT PROPOSALS

**Content Standards**

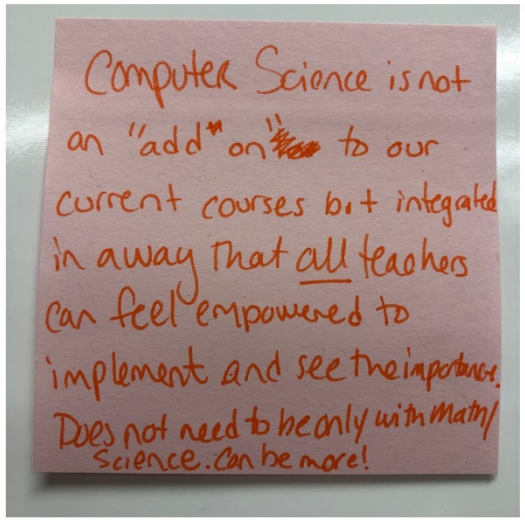
- ARM Chapter 53 and 54

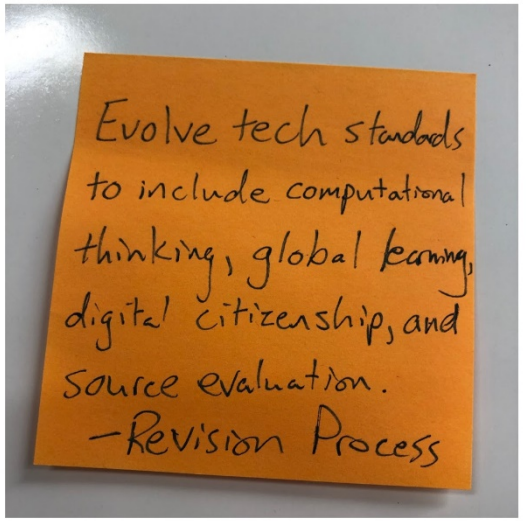
**Program Delivery Standards**

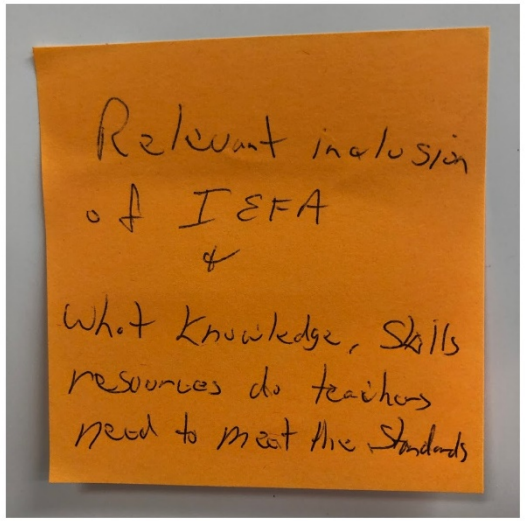
- ARM Chapter 55

# DIGGING IN

Review and Consensus Process



# ECONOMIC IMPACT SURVEY

**Review template**

- Additions?
- Clarification?

**Next steps**

- Sent to school administrators, business officials, and other interested parties via online survey

# WRAP UP FOR COMMITTEE

Next Meeting:

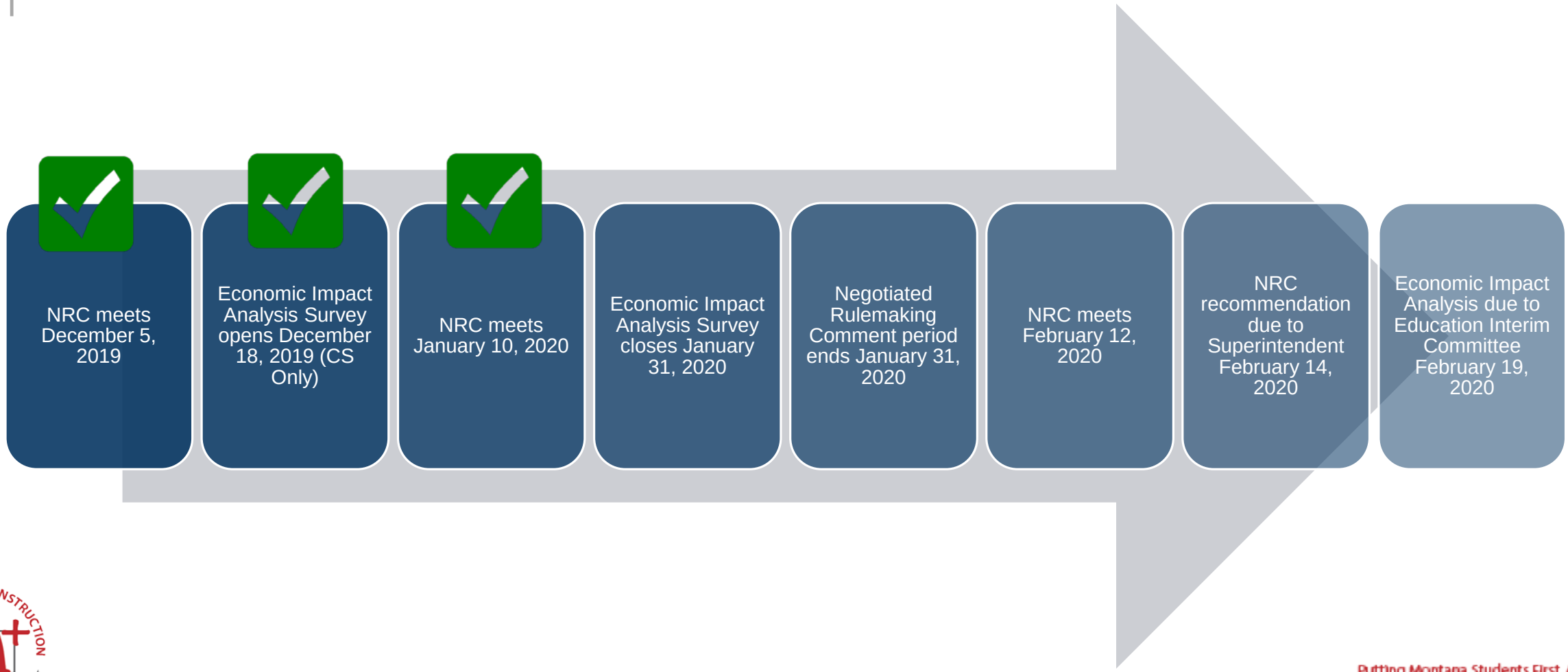
February 12, 2020

Hearing Room 102, Capitol Building

Helena, Montana

9:30 a.m. to 4:00 p.m.

# NRC PROPOSED TIMELINE



# PUBLIC COMMENT

Please introduce yourself and spell your last name.

If you are speaking on behalf of an organization, identify the organization and your association with the organization.

# KIRSTEN MADSEN
## FACILITATOR

**Assistant Attorney General**

**Agency Legal Services Bureau**

**Kmadsen@mt.gov**

**406-444-5850**

# COLET BARTOW

## OPI STAFF

**Director**

**Content Standards and Instruction**

**cbartow@mt.gov**

**406-444-3583**

# ADJOURN

**Thank you for your commitment to Montana Education.**

**Safe Travels!**

# COMPUTER SCIENCE DRAFT FOR ECONOMIC IMPACT SURVEY 12.16.19

This revised draft reflects the consensus decisions of the Computer Science Negotiated Rulemaking Committee, held on December 5, 2019.

Please visit the OPI K-12 Content Standards and Revision webpage for meeting agenda, minutes, video recording, and other meeting materials.

Contents

# MONTANA CONTENT STANDARDS FOR COMPUTER SCIENCE

## STANDARDS FOR COMPUTER SCIENCE FOR GRADES K-12

1. The content areas covered by the computer science standards include:
    a. algorithms and programming;
    b. computing systems;
    c. data and analysis;
    d. impacts of computing; and,
    e. computer science networks and the internet
2. When a district incorporates or integrates computer science content into district curriculum or offers a course in computer science, the following skills at each grade level apply:
    a. fostering an inclusive computing culture
    b. collaborating around computing
    c. recognizing and defining computational problems
    d. developing and using abstractions
    e. creating computational artifacts
    f. testing and refining computational artifacts; and
    g. communicating about computing

## COMPUTER SCIENCE CONTENT STANDARDS FOR KINDERGARTEN

1. Computer science algorithms and programming standards for kindergarten are:
    a. follow step-by-step instructions
    b. recognize that numbers and symbols represent information
2. Computer science computing systems standards for kindergarten are:
    a. identify computing devices
    b. identify examples of common hardware and software
3. Computer science data and analysis standards for kindergarten are:
    a. collect and categorize data
    b. retrieve information
    c. identify patterns in data
4. Computer science impacts of computing standards for kindergarten are:
    a. work respectfully and responsibly in groups
    b. keep login information private and log off devices appropriately

## COMPUTER SCIENCE CONTENT STANDARDS FOR FIRST GRADE

1. Computer science algorithms and programming standards for first grade are:
    a. retell step-by-step instructions to complete a task
    b. use numbers and symbols to represent information
    c. arrange sequences and simple loops in correct order
2. Computer science computing systems standards for first grade are:
    a. identify tasks that can be performed by computing devices
    b. use appropriate terminology in identifying common hardware and software
    c. identify simple hardware and software problems
3. Computer science data and analysis standards for first grade are:
    a. collect and categorize data in up to three categories
    b. retrieve, arrange, and modify information
    c. identify patterns in data
4. Computer science impacts of computing standards for first grade are:
    a. work respectfully and responsibly in groups
    b. keep login information private and log off devices appropriately

## COMPUTER SCIENCE CONTENT STANDARDS FOR SECOND GRADE

1. Computer science algorithms and programming standards for second grade are:
    a. model daily processes by creating and following sets of step-by-step instructions to complete tasks
    b. model the way programs store and manipulate data by using numbers or other symbols to represent information
    c. develop programs with sequences and simple loops to express ideas or address a problem
    d. break down the steps needed to solve a problem into a precise sequence of instructions
2. Computer science computing systems standards for second grade are:
    a. select and operate appropriate tools to perform a variety of tasks
    b. use appropriate terminology in identifying and describing the function of common hardware and software
    c. describe basic hardware and software problems using accurate terminology
3. Computer science data and analysis standards for second grade are:
    a. collect and present the data in various visual formats
    b. define data as gathered and stored information
    c. identify and describe patterns in data visualizations, such as charts or graphs, to make predictions
4. Computer science impacts of computing standards for second grade are:
    a. identify how computing technology has changed how the people, including American Indians, live and work
    b. work respectfully and responsibly online
    c. keep login information private and log off devices appropriately
5. Computer science networks and the internet standards for second grade are:
    a. explain what passwords are and why they are used
    b. recognize that computing devices and the internet enable people to connect with other people, places, information, and ideas

Note: 4a will be relooked at by the committee in January.

**Commented [MK1]:** NOTE:
Committee members are reviewing #4.a more closely during the interim will have additional discussion in January.

## COMPUTER SCIENCE CONTENT STANDARDS FOR THIRD GRADE

1. Computer science algorithms and programming standards for third grade are:
    a. compare and contrast multiple algorithms to complete the same task
    b. break down problems into smaller, manageable subproblems to facilitate the program development process
    c. describe steps taken and choices made during the process of program development
    d. identify intellectual property rights and give appropriate credit when creating or remixing programs
2. Computer science computing systems standards for third grade are:
    a. identify the internal and external parts of computing devices
    b. determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies
3. Computer science data and analysis standards for third grade are:
    a. collect data from multiple sources and display the data in graphs
    b. describe multiple types of data
    c. understand the accuracy of predictions and how they are influenced by the amount of data collected
4. Computer science impacts of computing standards for third grade are:
    a. collect diverse perspectives for the purpose of improving computational artifacts
    b. identify rules associated with the appropriate use of digital information when creating computational artifacts
    c. describe ethical issues that relate to computing devices and networks
5. Computer science networks and the internet standards for third grade are:
    a. identify how personal information can be protected

## COMPUTER SCIENCE CONTENT STANDARDS FOR FOURTH GRADE

1. Computer science algorithms and programming standards for fourth grade are:
    a. compare and refine multiple algorithms for the same task and determine which is the most appropriate
    b. break down problems into smaller, manageable subproblems to facilitate the program development process
    c. test and debug a program or algorithm to ensure it runs as intended
2. Computer science computing systems standards for fourth grade are:
    a. explain the function of individual internal and external parts
    b. determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies
3. Computer science data and analysis standards for fourth grade are:
    a. select and use appropriate non-digital and digital tools to collect and represent data
    b. identify and use multiple types of data to complete a task
    c. evaluate the validity of data based on accuracy and relevance
4. Computer science impacts of computing standards for fourth grade are:
    a. collect diverse perspectives for the purpose of improving computational artifacts
    b. identify rules associated with the appropriate use of digital information when creating computational artifacts
    c. describe ethical issues that relate to computing devices and networks
5. Computer science networks and the internet standards for fourth grade are:
    a. identify cybersecurity problems

## COMPUTER SCIENCE CONTENT STANDARDS FOR FIFTH GRADE

1. Computer science algorithms and programming standards for fifth grade are:
    a. compare and refine multiple algorithms for the same task and determine which is the most appropriate
    b. create programs that use variables to store and modify data
    c. create programs that include sequences, events, loops, and conditionals
    d. modify, remix, or incorporate portions of an existing program to develop something new or add more advanced features
    e. describe choices made during program development
2. Computer science computing systems standards for fifth grade are:
    a. describe how internal and external parts of computing devices function to form a system
    b. model how computer hardware and software work together as a system to accomplish tasks
    c. determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies
3. Computer science data and analysis standards for fifth grade are:
    a. organize and present collected data visually to highlight relationships and support a claim
    b. demonstrate how to store, copy, search, retrieve, modify, and delete information using a computing device
    c. use accurate and relevant data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea
4. Computer science impacts of computing standards for fifth grade are:
    a. explain how computing technologies have changed Montana and the world, and express how those technologies influence, and are influenced by, cultural practices, including American Indians
    b. identify ways to improve the accessibility and usability of technology products for the diverse needs and wants of users
    c. utilize diverse perspectives for the purpose of improving computational artifacts
    d. apply laws associated with digital information and intellectual property
    e. describe ethical issues that relate to computing devices and networks
5. Computer science networks and the internet standards for fifth grade are:
    a. explain cybersecurity problems
    b. explain how personal information can be protected

## COMPUTER SCIENCE CONTENT STANDARDS FOR SIXTH THROUGH EIGHTH GRADE

1. Computer science algorithms and programming standards for sixth through eighth grades are:
    a. use algorithms to address complex problems
    b. create clearly named variables that represent different data types and perform operations on their values
    c. develop programs that combine control structures, including nested loops and compound conditionals
    d. decompose problems and subproblems into parts to facilitate the design, implementation, and review of programs
    e. create procedures with parameters to organize code and make it easier to reuse
    f. seek and incorporate feedback from team members and users to refine a solution that meets user needs
    g. incorporate existing code, media, and libraries into original programs, and give attribution
    h. systematically test and refine programs using a range of test cases
    i. distribute tasks and maintain a project timeline when collaboratively developing computational artifacts
    j. document programs in order to make them easier to follow, test, and debug
2. Computer science computing systems standards for sixth through eighth grades are:
    a. recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices
    b. design projects that combine hardware and software components to collect and exchange data
    c. systematically identify and fix problems with computing devices and their components
3. Computer science data and analysis standards for sixth through eighth grades are:
    a. collect data using computational tools and transform the data to make it more useful and reliable
    b. represent data using multiple formats
    c. refine computational models based on the data they have generated
4. Computer science impacts of computing standards for sixth through eighth grades are:
    a. compare tradeoffs associated with computing technologies that affect people's everyday activities and career options in Montana and the world, including American Indians
    b. discuss issues of bias and accessibility in the design of existing technologies
    c. collaborate with other contributors when creating a computational artifact
    d. describe tradeoffs between allowing information, personal or intellectual, to be public and keeping information private and secure

5. Computer science networks and the internet standards for sixth through eighth grades are:
    a. explain how physical and digital security measures protect electronic information
    b. apply multiple methods of encryption to demonstrate how to securely transmit information
    c. demonstrate how information is broken down and transmitted through multiple devices over networks and the internet and reassembled at the destination

## COMPUTER SCIENCE CONTENT STANDARDS FOR NINTH THROUGH TWELFTH GRADES

1. Computer science algorithms and programming standards for ninth through twelfth grades are:
    a. create prototypes that use algorithms to solve computational problems by leveraging prior student knowledge and personal interests
    b. describe how artificial intelligence drives many software and physical systems
    c. implement an artificial intelligence algorithm to play a game against a human opponent or solve a problem
    d. use and adapt classic algorithms to solve computational problems
    e. evaluate algorithms in terms of their efficiency, correctness, and clarity
    f. use lists to simplify solutions, generalizing computational problems instead of repeatedly using simple variables
    g. compare and contrast fundamental data structures and their uses
    h. justify the selection of specific control structures when tradeoffs involve implementation, readability, and program performance, and explain the benefits and drawbacks of choices made
    i. design and iteratively develop computational artifacts for practical intent, personal expression, or to address a societal issue by using events to initiate instructions
    j. decompose problems into smaller components through systematic analysis, using constructs such as procedures, modules, or objects
    k. create artifacts by using procedures within a program, combinations of data and procedures, or independent but interrelated programs
    l. construct solutions to problems using student-created procedures, modules or objects
    m. analyze a large-scale computational problem and identify generalizable patterns that can be applied to a solution
    n. demonstrate code reuse by creating programming solutions using libraries and application programming interfaces
    o. systematically design and develop programs for broad audiences by incorporating feedback from users
    p. evaluate and refine computational artifacts to make them more usable and accessible
    q. design and develop computational artifacts working in team roles using collaborative tools
    r. document design decisions using text, graphics, presentations, or demonstrations in the development of complex programs
    s. plan and develop programs for broad audiences using a software life cycle process
    t. explain security issues that might lead to compromised computer programs

**Commented [MK2]:** NOTE:
Committee members are reviewing #1 more closely during the interim will have additional discussion in January.

u. develop programs for multiple computing platforms
v. use version control systems, integrated development environments, and collaborative tools and practices in a group software project
w. develop and use a series of test cases to verify that a program performs according to its design specifications
x. modify an existing program to add additional functionality and discuss intended and unintended implications
y. evaluate key qualities of a program through a process such as a code review
z. compare multiple programming languages and discuss how their features make them suitable for solving different types of problems

2. Computer science computing systems standards for ninth through twelfth grades are:
   a. explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects
   b. compare levels of abstraction and interactions between application software, system software, and hardware layers
   c. categorize the roles of operating system software
   d. develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors
   e. illustrate ways computing systems implement logic, input, and output through hardware components
3. Computer science data and analysis standards for ninth through twelfth grades are:
   a. create interactive data visualizations using software tools to help others better understand authentic phenomena
   b. use data analysis tools and techniques to identify patterns in data representing complex systems
   c. select data collection tools and techniques to generate data sets that support a claim or communicate information
   d. translate between different bit representations of authentic phenomena, including characters, numbers, and images
   e. evaluate the tradeoffs in how data elements are organized and where data is stored
   f. create computational models that represent the relationships among different elements of data collected from a phenomenon or process
   g. evaluate the ability of models and simulations to test and support the refinement of hypotheses
4. Computer science impacts of computing standards for ninth through twelfth grades are:
   a. evaluate the ways computing technologies, globally and locally, impact personal, ethical, social, economic, and cultural practices, including those of American Indians
   b. test and refine computational artifacts to reduce bias and equity deficits
   c. demonstrate ways a given algorithm applies to problems across disciplines

d. evaluate computational artifacts to maximize their beneficial effects and minimize harmful effects on society
e. evaluate the impact of equity, access, and influence on the distribution of computing resources in a global society, including with respect to American Indians
f. predict how computational innovations that have revolutionized aspects of our culture might evolve
g. use tools and methods for collaboration on a project to increase connectivity of people in different cultures and career fields
h. explain the beneficial and harmful effects that intellectual property laws can have on innovation
i. explain the privacy concerns related to the collection and generation of data through automated processes that may not be evident to users
j. evaluate the social and economic implications of privacy in the context of safety, law, or ethics
k. debate laws and regulations that impact the development and use of software

5. Computer science networks and the internet standards for ninth through twelfth grades are:
   a. recommend security measures to address various scenarios based on factors including efficiency, feasibility, and ethical impacts
   b. explain tradeoffs when selecting and implementing cybersecurity recommendations
   c. compare ways software developers protect devices and information from unauthorized access
   d. evaluate the scalability and reliability of networks by describing the relationship between routers, addressing, switches, servers, and topology
   e. give examples to illustrate how sensitive data can be affected by malware and other attacks
   f. compare various security measures, considering tradeoffs between the usability and security of a computing system
   g. discuss the issues that impact functionality

**Commented [MK3]:** NOTE re 4.e and 4.g:
Committee members are reviewing these more closely during the interim will have additional discussion in January.

**Commented [MK4]:** NOTE:
See above re 4.e.

## COMPUTER SCIENCE PROGRAM DELIVERY STANDARDS

Administrative Rules of Montana Chapter 55 – NEW RULE PROPOSAL

Because this is a new content area, there are no previous program delivery standards to compare.

1. In general, a basic program in computer science education shall:
    a. meet the following conditions:
        i. provide a well-articulated integrated curriculum that challenges students to learn increasingly more sophisticated computer science concepts across all grade levels and content areas wherever appropriate
        ii. foster a collaborative environment that embraces creativity, communication, and problem solving
    b. include the following practices:
        i. ensure students become informed citizens who can critically engage in public discussion on computer science related topics
        ii. ensure students develop as learners, users, and creators of computer science knowledge and artifacts
        iii. ensure students understand the role and impact of computing in the world around them, leveraging computer technology to create solutions
        iv. increase career and college readiness

COMMITTEE MEMBERS

| | | |
|---|---|---|
| Kar | Sheppard | East Glacier Park |
| Shelly | Stanton | Billings |
| Ann | Ewbank | Bozeman |
| Shaundel | Krumheuer | Billings |
| Shannon | Hanson | Whitefish |
| Richard | Gross | Kalispell |
| Carla | Swenson | Glasgow |
| Renee | Rasmussen | Bainville |
| Noelle | Harper | Bozeman |
| Steve | Qunell | Whitefish |
| Melody | Lee | Anaconda |
| Gary | Myers | Helena |
| Dee | Hensley-Maclean | Hamilton |
| Mistyne | Hall | Browning |
| Nikolas | Griffith | Helena |

# TECHNOLOGY INTEGRATION STANDARDS DRAFT FOR NRC 12.5.19

## TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR GRADES K-12

1. The technology integration standards may include skills for:
    a. empowered learners
    b. digital citizens
    c. knowledge constructors
    d. innovative designers
    e. computational thinkers
    f. creative communicators
    g. global collaborators
    h. reflective users

## TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR KINDERGARTEN

1. The empowered learner content standards for kindergarten are that each student will:
    a. explore a variety of technologies that will help them in their learning
2. The digital citizen content standards for kindergarten are that each student will:
    a. explore appropriate use of devices
    b. explore sharing of information and how to respect the work of others
    c. explore the importance of keeping their information private
3. The innovative designer content standards for kindergarten are that each student will:
    a. explore a design process with digital and non-digital tools
4. The computational thinker content standards for kindergarten are that each student will:
    a. explore how technology is used to make a task easier

## THE TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR FIRST GRADE

1. The  empowered learner content standards for first grade are that each student will:
    a. explore a variety of technologies that will help them in their learning
2. The digital citizen content standards for first grade are that each student will:
    a. practice responsible use of technology
    b. explore appropriate use of devices and how to be safe online
    c. explore sharing of information and how to respect the work of others
    d. explore the importance of keeping their information private
3. The innovative designer content standards for first grade are that each student will:
    a. explore digital and non-digital tools to design a product
    b. explore a design process to develop ideas or creations
4. The computational thinker content standards for first grade are that each student will:
    a. explore breaking down a problem into parts and identify ways to solve the problem

## TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR SECOND GRADE

1. The empowered learner content standards for second grade are that each student will:
    a. explore a variety of technologies that will help them in their learning
2. The digital citizen content standards for second grade are that each student will:
    a. practice responsible use of technology
    b. explore appropriate use of devices and how to be safe online
    c. explore ownership of information and how to respect the work of others
    d. explain the importance of keeping their information private
3. The knowledge constructor content standards for second grade are that each student will:
    a. explore a variety of tools to organize information
4. The innovative designer technology content standards for second grade are that each student will:
    a. use digital and non-digital tools to design a product
    b. use a design process to develop ideas or creations
5. The computational thinker content standards for second grade are that each student will:
    a. break down a problem into parts and identify ways to solve the problem
    b. explain how technology can make a task easier
6. The creative communicator content standards for second grade are that each student will:
    a. explore different tools for creating something new or for communicating with others

TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR THIRD GRADE

1. The empowered learner content standards for third grade are that each student will:
    a. set personal learning goals and use appropriate technologies that will demonstrate knowledge
    b. recognize how knowledge can be transferred between tools
2. The digital citizen content standards for third grade are that each student will:
    a. identify and practice responsible use of technology
    b. identify appropriate use of devices and how to be safe online
    c. identify ownership of information and how to respect the work of others
    d. recognize the importance of keeping their information private
3. The knowledge constructor content standards for third grade are that each student will:
    a. identify digital tools and resources to find information on topics of interest
    b. explore sources for accuracy, credibility, and relevance
    c. identify a variety of tools to organize information
4. The innovative designer content standards for third grade are that each student will:
    a. define questions, find solutions, test ideas to solve problems and share their learning
    b. use digital and non-digital tools to design a product with a step-by-step design process
5. The computational thinker content standards for third grade are that each student will:
    a. define a problem and select appropriate technology tools to explore and find solutions
    b. evaluate data in order to identify patterns and categories
    c. break down problems into smaller parts, identify key information, and propose solutions
    d. evaluate how technology is used to make a task easier or repeatable
6. The creative communicator content standards for third grade are that each student will:
    a. use strategies for remixing or repurposing resources to create new works
    b. create digital objects to communicate ideas visually and graphically

## TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR FOURTH GRADE

1. The empowered learner content standards for fourth grade are that each student will:
    a. develop learning goals and choose the appropriate technology tools to achieve them
    b. explore technologies and transfer their learning to different tools or learning environments
2. The digital citizen content standards for fourth grade are that each student will:
    a. recognize the role an online identity plays in the digital world and in real life
    b. practice safe, legal and ethical behavior when using technology and interacting online
    c. define ownership of intellectual property and appropriate sharing of information
    d. identify what personal data is, the importance of keeping it private, and how it might be shared online
3. The knowledge constructor content standards for fourth grade are that each student will:
    a. use research techniques to locate digital resources
    b. evaluate sources for accuracy, perspective, cultural sensitivity, credibility, and relevance
    c. use a variety of strategies to organize information and make meaningful connections between resources
4. The innovative designer technology content standards for fourth grade are that each student will:
    a. practice using digital and non-digital tools to plan and manage a design process
    b. practice using a cyclical design process to develop prototypes and reflect on the role that trial and error play
5. The computational thinker content standards for fourth grade are that each student will:
    a. explore or solve problems by selecting technology, analyzing data, and creating models
    b. break down problems into smaller parts, identify key information, and propose solutions
    c. explore basic concepts related to automation, patterns, and algorithmic thinking
6. The creative communicator content standards for fourth grade are that each student will:
    a. identify the features and functions of a variety of creation or communication tools
    b. create original works by practicing strategies for remixing or repurposing
    c. create digital objects to communicate ideas visually and graphically
7. The global collaborator content standards for fourth grade are that each student will:
    a. identify digital tools to work with friends and people from different backgrounds or cultures
    b. identify collaborative technologies to connect with others, including peers, experts and community members, to explore different points of view on various topics
    c. practice working with others using collaborative technologies

8. The reflective user content standards for fourth grade are that each student will:
    a. evaluate personal preferences for use of technology tools for different tasks or purposes

## TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR FIFTH GRADE

1. The empowered learner content standards for fifth grade are that each student will:
    a. develop learning goals, select the technology tools to achieve them, and reflect on and revise the learning process as needed to achieve goals
    b. transfer their learning to different tools or learning environments
2. The digital citizen content standards for fifth grade are that each student will:
    a. demonstrate an understanding of the role an online identity plays in the digital world and permanence of their decisions when interacting online
    b. engage in safe, legal and ethical behavior when using technology and interacting online
    c. demonstrate respect for intellectual property when using and sharing the work of others
    d. explain what personal data is, how to keep it private, and how it might be shared online
3. The knowledge constructor content standards for fifth grade are that each student will:
    a. employ appropriate research techniques to locate digital resources
    b. evaluate sources for accuracy, perspective, cultural sensitivity, credibility, and relevance
    c. organize information and make meaningful connections between resources
4. The innovative designer technology content standards for fifth grade are that each student will:
    a. use a design process to generate ideas, consider solutions, solve a problem or create innovative products
    b. use digital and non-digital tools to plan and manage a design process
    c. use a cyclical design process to develop prototypes and reflect on the role that trial and error play
5. The computational thinker content standards for fifth grade are that each student will:
    a. explore or solve problems by selecting technology for data analysis, modeling and algorithmic thinking
    b. break down problems into smaller parts, identify key information, and propose solutions
    c. identify basic concepts related to automation, patterns, and algorithmic thinking
6. The creative communicator content standards for fifth grade are that each student will:
    a. identify and use the features of a variety of creation or communication tools
    b. use a variety of strategies for remixing or repurposing to create new works
    c. create digital objects to communicate ideas visually and graphically
7. The global collaborator content standards for fifth grade are that each student will:
    a. use appropriate digital tools to work with friends and people from different backgrounds or cultures
    b. perform a variety of roles within a team using age-appropriate technology to complete a project or solve a problem

8. The reflective user content standards for fifth grade are that each student will:
    a. evaluate personal preferences for use of technology tools for different tasks or purposes

## TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR SIXTH - EIGHTH GRADES

1. The empowered learner content standards for sixth- eighth grades are that each student will:
    a. define personal learning goals, select and manage appropriate technologies to achieve them, and reflect on their successes and areas of improvement in working toward their goals
    b. navigate a variety of technologies and transfer their knowledge and skills to learn how to use new technologies
2. The digital citizen content standards for sixth-eighth grades are that each student will:
    a. manage their digital identities and reputations, including demonstrating an understanding of how digital actions are permanent and never fully erasable
    b. demonstrate positive, safe, legal and ethical habits when using technology and when interacting with others online
    c. demonstrate and model the use of intellectual property of print and digital media, including copyright, permission and fair use, by creating a variety of media products that include appropriate citation and attribution elements
    d. demonstrate how to keep personal data secure and understand how data-collection technologies work
3. The knowledge constructor content standards for sixth-eighth grades are that each student will:
    a. use research strategies effectively to locate appropriate digital resources in support of their learning
    b. evaluate resources for accuracy, perspective, cultural sensitivity, credibility and relevance
    c. locate and collect resources from a variety of sources and organize into collections for a range of projects and purposes
4. The innovative designer technology content standards for sixth-eighth grades are that each student will:
    a. engage in design processes to generate ideas, create innovative products, or solve problems
    b. select and use digital tools to support design processes, identify constraints and trade-offs, and weigh risks
    c. engage in design processes to develop, test and revise prototypes, use the cyclical process of trial and error, and understanding problems or setbacks as potential opportunities for improvement
5. The computational thinker content standards for sixth-eighth grades are that each student will:
    a. investigate and practice solving problems by using data analysis, modeling or algorithmic thinking

b. organize data and use technology to display, analyze, solve problems, and make decisions
c. break down problems into component parts, identify key pieces and use that information to problem solve
d. demonstrate an understanding of how automation works and use algorithmic thinking to design and automate solutions

6. The creative communicator content standards for sixth-eighth grades are that each student will:
    a. select appropriate platforms and tools to create, share, and communicate their work
    b. create original works or responsibly remix and repurpose other digital resources into new creative works
    c. communicate complex ideas clearly using various digital tools to convey the concepts textually, visually, or graphically
7. The global collaborator content standards for sixth-eighth grades are that each student will:
    a. identify and use collaborative technologies to connect with others, including peers, experts, and community
    b. determine their role on a team to meet goals, based on their knowledge of technology and content, as well as personal preference
8. The reflective user content standards for sixth-eighth grades are that each student will:
    a. examine historical, cultural, and social impacts of technology innovations on individuals and groups, including American Indians
    b. explain how technology innovations influence their individual technology tool and resource preferences

## TECHNOLOGY INTEGRATION CONTENT STANDARDS FOR NINTH-TWELFTH GRADES

1. The empowered learner content standards for ninth-twelfth grades are that each student will:
    a. set personal learning goals, develop strategies leveraging technology to achieve them, and reflect on the learning process to improve learning outcomes
    b. build networks and customize their learning environments in ways that support their learning process
    c. use technology to seek feedback that informs and improves their practice and to demonstrate their learning in a variety of ways
    d. demonstrate the ability to choose, use, and troubleshoot current technologies, and transfer their knowledge to explore emerging technologies
2. The digital citizen content standards for ninth-twelfth grades are that each student will:
    a. cultivate and manage a positive digital identity and reputation
    b. engage in positive, safe, legal and ethical behavior when using technology, including social interactions online or when using networked devices
    c. respect the rights and obligations of creating, using, and sharing intellectual property
    d. manage their personal data to maintain digital privacy and security
3. The knowledge constructor content standards for ninth-twelfth grades are that each student will:
    a. use research strategies to locate information and resources for their intellectual or creative pursuits
    b. evaluate the accuracy, perspective, cultural sensitivity, credibility, and relevance of information, media, data, or other resources
    c. curate information from digital resources using a variety of tools and methods to create collections of artifacts that demonstrate meaningful connections or conclusions
4. The innovative designer technology content standards for ninth-twelfth grades are that each student will:
    a. initiate a deliberate design process for generating ideas, testing theories, creating innovative artifacts, or solving authentic problems
    b. select and use digital tools to plan and manage a design process that considers design constraints and calculated risks
    c. develop, test and refine prototypes as part of a cyclical design process
5. The computational thinker content standards for ninth-twelfth grades are that each student will:
    a. identify problems suited for technology-assisted methods for data analysis, abstract models, and algorithmic thinking

b. collect data or identify relevant data sets, use digital tools to analyze them, and represent data in various ways to facilitate problem-solving and decision-making
c. break down problems into component parts, extract key information, and develop descriptive models to understand complex systems or facilitate problem-solving
d. explain how automation works and use algorithmic thinking to develop a sequence of steps to create and test automated solutions

6. The creative communicator content standards for ninth-twelfth grades are that each student will:
    a. choose the appropriate platforms and tools for meeting the desired objectives of their creation or communication
    b. create original works or responsibly repurpose or remix digital resources into new creative works
    c. communicate complex ideas clearly and effectively by creating or using a variety of digital objects such as visualizations, models or simulations
    d. publish, present, and defend content that customizes the message and medium for their intended audiences
7. The global collaborator content standards for ninth-twelfth grades are that each student will:
    a. identify and use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding and learning
    b. identify and use collaborative technologies to work with others, including peers, experts or community members, to examine issues and problems from multiple viewpoints
    c. contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal
8. The reflective user content standards for ninth-twelfth grades are that each student will:
    a. evaluate historical, cultural, and social impacts of technology innovations on individuals and groups, including American Indians
    b. explain how technology innovations influence their individual technology tool and resource preferences

# TECHNOLOGY INTEGRATION STANDARDS DRAFT FOR NRC 12.5.19

## Administrative Rules of Montana Chapter 55

Program Delivery Standards Recommendation - NEW

1. In general, a basic program in technology education shall:
    a. meet the following conditions:
        i. development of skills that lead to lifelong pursuits;
        ii. provide opportunities for authentic application, work experience, and articulation with postsecondary education
        iii. integrate and transfer technology skills across grade levels, content areas, and programs
        iv. provide access to emerging technology across grade levels, content areas, and programs
    b. include the following practices:
        i. full progression of skills and knowledge from basic to advanced
        ii. full integration of technology competencies with academic knowledge in a contextual setting
        iii. include whole group, teacher-led, or personalized instruction

# INFORMATION LITERACY/LIBRARY MEDIA STANDARDS DRAFT FOR NRC 12.5.19

## LIBRARY MEDIA AND INFORMATION LITERACY CONTENT STANDARDS

1. When a district incorporates or integrates library media and information literacy content into district curriculum or offers an elective course in library media and information literacy, the following standards apply:
    a. Students must identify the task and determine resources needed
    b. Students will locate sources, use information, and present findings
    c. Students will evaluate learning products and learning process
    d. Students will use information safely, ethically, and legally

## THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR KINDERGARTEN

1. Identify the task and determine resources content standards for kindergarten are that each student will:
    a. retell the problem or task
    b. explore possible resources from a limited selection
2. Locate sources, use information, and present findings content standards for kindergarten are that each student will:
    a. recognize the library personnel as a resource
    b. locate fiction and nonfiction resources
    c. identify parts of a book
    d. view and listen for information
    e. identify relevant information
    f. sequence information
    g. present original work
3. Evaluate learning products and learning process content standards for kindergarten are that each student will:
    a. compare products to criteria
    b. explore ideas for improvement of the product
    c. retell the steps that were used
    d. discuss how well the process worked
4. Use information safely, ethically, and legally content standards for kindergarten are that each student will:
    a. explain internet safety and appropriate online behavior
    b. connect ideas and information with their owners or source

THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARD CONTENT STANDARDS FOR FIRST GRADE

1. Identify the task and determine resources content standards for first grade are that each student will:
    a. retell problem or task and topic
    b. identify the steps needed to solve the problem or task
    c. discuss possible resources
    d. choose resources from a limited selection
2. Locate sources, use information, and present findings content standards for first grade are that each student will:
    a. locate major sections in the library
    b. locate library resources using call numbers
    c. explore fiction and nonfiction resources including those by and about Montana Indians
    d. identify relevant information
    e. identify and credit sources
    f. sequence and sort information
    g. present original work
3. Evaluate the product and learning process content standards for first grade are that each student will:
    a. compare products to criteria
    b. identify an idea for improvement of the product
    c. retell the steps that were used
    d. discuss how well the process worked
4. Use information safely, ethically, and legally content standards for first grade are that each student will:
    a. explain internet safety and appropriate online behavior
    b. connect ideas and information with their owners or source

THE LIBRARY MEDIA AND INFORMATION LITERACY CONTENT STANDARDS FOR SECOND GRADE

1. Identify the task and determine resources content standards for second grade are that each student will
    a. identify a topic
    b. describe the problem or task
    c. follow the steps needed to solve the problem or task
    d. discuss possible resources
    e. choose resources from a limited selection
2. Locate sources, use information, and present findings content standards for second grade are that each student will:
    a. locate major sections in the library
    b. locate resources using a library catalog or databases
    c. compare fiction and nonfiction resources including those by and about Montana Indians
    d. identify relevant information
    e. summarize information
    f. identify and credit sources
    g. sequence and sort information
    h. present original work
3. Evaluate the product and learning process content standards for third grade are that each student will:
    a. compare product to criteria
    b. generate ideas for improvement of the product
    c. retell the steps that were used
    d. describe how well the process worked
4. Use information safely, ethically, and legally content standards for third grade are that each student will:
    a. explain internet safety and appropriate online behavior
    b. describe criteria to determine safe and unsafe internet sites
    c. connect ideas and information with their owners or source
    d. credit sources

THE LIBRARY MEDIA AND INFORMATION LITERACY CONTENT STANDARDS FOR THIRD GRADE

1. Identify the task and determine resources content standards for third grade are that each student will:
    a. identify a topic
    b. describe the problem or task
    c. follow the steps needed to solve the problem or task
    d. discuss and identify possible resources
    e. determine relevant resources to solve the problem or task
2. Locate sources, use information, and present findings content standards for third grade are that each student will:
    a. locate resources using search techniques
    b. locate resources using a library catalog or database
    c. evaluate resources for relevance, appropriateness, detail, currency, authority, and bias including those by and about Montana Indians
    d. locate index, table of contents, and glossary
    e. recognize and utilize context clues to locate information
    f. identify relevant information
    g. summarize information
    h. cite sources
    i. organize information
    j. present original work
3. Evaluate learning products and learning process content standards for third grade are that each student will:
    a. compare product to criteria
    b. generate ideas for improvement of the product
    c. summarize the steps of the process
    d. describe how well the process worked
4. Use information safely, ethically, and legally content standards for third grade are that each student will:
    a. practice internet safety and appropriate online behavior
    b. use criteria to determine safe and unsafe internet sites
    c. connect ideas and information with their owners or source
    d. credit sources

THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR FOURTH GRADE

1. Identify the task and determine resources content standards for fourth grade are that each student will:
    a. identify the topic
    b. define a problem or task in their own words
    c. determine questions and steps needed to solve the problem or task
    d. identify possible resources
    e. determine relevant resources to solve the problem or task
2. Locate sources, use information, and present findings content standards for fourth grade are that each student will:
    a. locate resources using search techniques
    b. locate resources using a library catalog or database
    c. evaluate resources for relevance, appropriateness, detail, currency, authority, and bias including those by and about Montana Indians
    d. use index, table of contents, or glossary to locate information within a resource
    e. recognize and utilize context clues to locate information
    f. identify relevant information
    g. summarize information
    h. cite sources
    i. organize and refine relevant information
    j. design and present original work
3. Evaluate learning products and learning process content standards for fourth grade are that each student will:
    a. compare product to criteria
    b. generate ideas for improvement of the product
    c. summarize the steps of the process
    d. describe how well the process worked
4. Use information safely, ethically, and legally content standards for fourth grade are that each student will:
    a. practice internet safety and appropriate online behavior
    b. use criteria to determine safe and unsafe internet sites
    c. connect ideas and information with their owners or source
    d. credit sources by following copyright and fair use guidelines
    e. recognize plagiarism

THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR FIFTH GRADE

1. Identify the task and determine resources content standards for fifth grade are that each student will:
    a. identify topic-related keywords
    b. summarize task to broaden or narrow topic
    c. identify questions and steps needed to solve a problem or task
    d. identify possible resources
    e. determine relevant resources to solve the problem or task
2. Locate sources, use information, and present findings content standards for fifth grade are that each student will:
    a. locate resources using advanced search techniques
    b. use search techniques to locate resources
    c. identify point of view in resources
    d. evaluate resources for relevance, currency, and authority, including those by and about Montana Indians
    e. use index, table of contents, or glossary to locate information within a resource
    f. identify topic keywords
    g. record location of information within resources
    h. locate and summarize relevant information
    i. cite each source
    j. use a note taking method to record relevant information
    k. design and present original work that meets task criteria
3. Evaluate the product and learning process content standards for fifth grade are that each student will:
    a. identify product's strengths and weaknesses according to task criteria
    b. critique final product
    c. identify areas for improvement of the product
    d. summarize the steps of the process
    e. describe how well the process worked
    f. identify areas for improvement in the process
4. Use information safely, ethically, and legally content standards for fifth grade are that each student will:
    a. practice internet safety and appropriate online behavior
    b. use criteria to determine safe and unsafe internet sites
    c. connect ideas and information with their owners or source
    d. credit sources by following copyright, licensing, and fair use guidelines
    e. recognize plagiarism

THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR SIXTH THROUGH EIGHTH GRADE

1. Identify the task and determine resources content standards for sixth through eighth grade are that each student will:
    a. identify topic-related keywords
    b. summarize task to broaden or narrow topic
    c. define questions and steps needed to solve a problem or task
    d. identify relevant resources
    e. identify point of view in resources
    f. identify authority of resources
2. Locate sources, use information, and present findings content standards for sixth through eighth grade are that each student will:
    a. locate resources using advanced search techniques
    b. identify point of view in resources
    c. evaluate resources for relevance, currency, authority, and bias including those by and about Montana Indians
    d. identify keywords and keyword phrases by skimming and scanning
    e. use index, table of contents, or glossary to locate information within a resource
    f. record location of information within resources
    g. locate, summarize and paraphrase relevant information
    h. cite each source
    i. use note taking methods to record relevant information
    j. organize information
    k. design and present original work that meets task criteria
3. Evaluate learning products and learning process content standards for sixth through eighth grade are that each student will:
    a. describe product's strengths and weaknesses according to task criteria
    b. critique final product
    c. identify areas for improvement in the product
    d. summarize the steps of the process
    e. describe how well the process worked
    f. identify areas for improvement in the process
4. Use information safely, ethically, and legally content standards for sixth through eighth grade are that each student will:
    a. practice internet safety and appropriate online behavior
    b. use criteria to determine safe and unsafe internet sites
    c. participate safely, ethically, and legally in online activities
    d. connect ideas and information with their owners or source
    e. credit sources by following copyright, licensing, and fair use guidelines
    f. recognize plagiarism and its consequences

THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR NINTH THROUGH TWELFTH GRADE

1. Identify the task and determine resources content standards for ninth through twelfth grade are that each student will:
    a. identify topic-specific keywords
    b. assess whether the topic is too narrow or broad and adjust accordingly
    c. interpret prior and background knowledge
    d. develop and refine a range of questions to solve the problem or task
    e. Propose relevant resources
    f. identify point of view in resources
    g. identify authority of resources
    h. identify primary and secondary sources
2. Locate sources, use information, and present findings content standards for ninth through twelfth grade are that each student will:
    a. locate resources using advanced search techniques
    b. evaluate resources for accuracy, relevance, authority, detail, currency, and bias, including those by and about Montana Indians
    c. perform advanced searches within digital resources
    d. use keywords to locate and cross-reference information to match the task
    e. document location of information within resources
    f. read, view and listen to make inferences
    g. summarize, paraphrase, or directly quote relevant details
    h. cite each source
    i. use note taking methods to record relevant information
    j. organize information
    k. design and present original work that meets task criteria
3. Evaluate the product and learning process content standards for ninth through twelfth grade are that each student will:
    a. describe product's strengths and weaknesses according to task criteria
    b. compare self- assessment to teacher and peer feedback
    c. revise and edit based on feedback
    d. evaluate time management throughout the process
    e. evaluate the strengths and weaknesses of the process
4. Use information safely, ethically, and legally content standards for ninth through twelfth grade are that each student will:
    a. practice internet safety and appropriate online behavior
    b. use criteria to determine safe and unsafe internet sites
    c. participate safely, ethically, and legally in online activities
    d. connect ideas and information with their owners or source
    e. credit sources by following copyright, licensing, and fair use guidelines
    f. recognize plagiarism and its consequences

Administrative Rules of Montana Chapter 55

LIBRARY MEDIA SERVICES, K-12 10.55.709

| Current ARM | Recommendation | Modification |
|---|---|---|
| (1) The school library shall be housed in a central location, and each school shall have a licensed and endorsed library media specialist at the following ratio: | keep as is | |
| (a) 5 FTE for schools with 126-250 students; | keep as is | |
| (b) 1 FTE for schools with 251-500 students; | keep as is | |
| (c) 1 5 FTE for schools with 501-1000 students; | keep as is | |
| (d) 2 FTE for schools with 1001-1500 students; | keep as is | |
| (e) 2 5 FTE for schools with 1501-2000 students; | keep as is | |
| (f) 3 FTE for schools with 2001 or more students | keep as is | |
| (2) Schools of fewer than 126 students shall employ or contract with a licensed and endorsed school library media specialist | keep as is | |
| (3) If a district has fewer than 126 students, the district may utilize a consortium, multidistrict agreement, or interlocal cooperative to secure these services | keep as is | |

# Administrative Rules of Montana Chapter 55

## LIBRARY MEDIA PROGRAM DELIVERY STANDARDS 10.55.1801

| Current ARM | Recommendation | Modification |
|---|---|---|
| (1) In general, a basic program in library media shall: | | |
| **(a) meet the following conditions:** | | |
| (i) establish flexible scheduling to ensure that libraries respond to information needs, foster intellectual curiosity, and support learning; | modify | (i) establish ~~flexible~~ appropriate scheduling, fixed or flexible, to ensure that libraries respond to information needs, foster intellectual curiosity, and support learning; |
| (ii) ensure collaboration with classroom teachers of all disciplines to implement content area standards and to assist students in engaging in the inquiry/research process; | keep as is | |
| (iii) model and support the ethical use of information, adherence to copyright laws, and respect for intellectual property; and | keep as is | |
| (iv) advise the board of trustees on policy and rule pertaining to: | keep as is | |
| (A) developing and maintaining a library collection that is current, balanced, and reflects authentic historical and cultural contributions of Montana's American Indians and other minority and ethnic groups; | modify | (A) develop~~ing~~ and maintain~~ing~~ a physical and digital library collection that is current, balanced, and reflects authentic historical and cultural contributions of Montana's American Indians and other minority and ethnic groups; |
| (B) engaging in comprehensive long range planning to administer and manage, in a secure area, the human, financial, and physical resources of the library to locate, access, and use on-site resources that are organized and cataloged; and | modify | (B) engage~~ing~~ in comprehensive long range planning to administer and manage, in a secure area, the human, financial, digital, and physical resources of the library to locate, access, and use ~~on-site~~ resources that are organized and cataloged; and |
| (C) implementing a viable collection development policy which includes the following components: | modify | (C) implement~~ing~~ a viable collection development policy which includes the following components: |

| Current ARM | Recommendation | Modification |
|---|---|---|
| (I) materials selection and de-selection; | keep as is | |
| (II) challenged materials procedure; | keep as is | |
| (III) intellectual/academic freedom statement; | keep as is | |
| (IV) confidentiality assurance; | keep as is | |
| (V) copyright guidelines; and | keep as is | |
| (VI) gifts and donations | keep as is | |
| **(b) include the following practices:** | | |
| (i) collaborate with classroom teachers of all disciplines to highlight and reinforce the commonalities and links between and among the curricular areas; | keep as is | |
| (ii) cooperate and join with other libraries, information agencies, and community resources in the sharing of materials; | keep as is | |
| (iii) encourage partnerships with information centers that use electronic information systems; and | modify | (iii) encourage partnerships with ~~information centers that use~~ providers of digital ~~electronic~~ content and information systems; and |
| (iv) participate in school-wide technology and telecommunications planning and promote its integration into all instructional programs | modify | (iv) participate in school-wide ~~technology and telecommunications~~ digital service and content planning and promote its integration into all instructional programs |

LIBRARY MEDIA AND INFORMATION LITERACY CONTENT STANDARDS

1. When a district incorporates or integrates library media and information literacy content into district curriculum or offers an elective course in library media and information literacy, the following standards apply:
    a. Students will build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    b. Students will demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    c. Students will work effectively with others to broaden perspectives and work toward common goals.
    d. Students will make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    e. Students will discover and innovate through experience and reflection.
    f. Students will exercise their freedom to read and demonstrate their ability to pursue personal interests.
    g. Students will demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    h. Students will engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

## THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR KINDERGARTEN

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Form simple, factual level questions and begin to explore ways to answer them.
    b. Ask “I wonder” questions about topic, question, or problem.
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Share knowledge and ideas with others through discussion and listening.
    b. Formulate questions related to content presented by others.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Listen respectfully and, when appropriate, offer information and opinions in group discussions.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. With guidance and support, generate questions about a topic and select a focal question to explore.
5. Discover and innovate through experience and reflection.
    a. Routinely select picture, fiction, and information books.
    b. Explore new genres.
    c. Begin to recognize that different genres require different reading, listening, or viewing strategies.
    d. Make connections between literature and personal experiences.
    e. Select books at the appropriate reading level, to be read aloud, or challenging books for browsing and enjoyment.
    f. Express feelings about a story through pictures and words.
    g. Express ideas through simple products in different formats.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Request, choose, and share a variety of materials from various genres related to personal interests.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. With guidance and support, acknowledge the work of others by citing sources.
    b. With guidance and support, maintain safe behavior when using the internet.
8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

## THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR FIRST GRADE

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Form simple, factual level questions and begin to explore ways to answer them.
    b. Ask “I wonder” questions about topic, question, or problem.
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Share knowledge and ideas with others through discussion and listening.
    b. Formulate questions related to content presented by others.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Listen respectfully and, when appropriate, offer information and opinions in group discussions.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. With guidance and support, generate questions about a topic and select a focal question to explore.
5. Discover and innovate through experience and reflection.
    a. Routinely select picture, fiction, and information books.
    b. Explore new genres.
    c. Begin to recognize that different genres require different reading, listening, or viewing strategies.
    d. Make connections between literature and personal experiences.
    e. Select books at the appropriate reading level, to be read aloud, or challenging books for browsing and enjoyment.
    f. Express feelings about a story through pictures and words.
    g. Express ideas through simple products in different formats.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Request, choose, and share a variety of materials from various genres related to personal interests.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. With guidance and support, acknowledge the work of others by citing sources.
    b. With guidance and support, maintain safe behavior when using the internet.
8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

## THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR SECOND GRADE

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Form simple, factual level questions and begin to explore ways to answer them.
    b. Ask “I wonder” questions about topic, question, or problem.
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Share knowledge and ideas with others through discussion and listening.
    b. Formulate questions related to content presented by others.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Listen respectfully and, when appropriate, offer information and opinions in group discussions.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. With guidance and support, generate questions about a topic and select a focal question to explore.
5. Discover and innovate through experience and reflection.
    a. Routinely select picture, fiction, and information books.
    b. Explore new genres.
    c. Begin to recognize that different genres require different reading, listening, or viewing strategies.
    d. Make connections between literature and personal experiences.
    e. Select books at the appropriate reading level, to be read aloud, or challenging books for browsing and enjoyment.
    f. Express feelings about a story through pictures and words.
    g. Express ideas through simple products in different formats.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Request, choose, and share a variety of materials from various genres related to personal interests.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. With guidance and support, acknowledge the work of others by citing sources.
    b. With guidance and support, maintain safe behavior when using the internet.
8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

## THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR THIRD GRADE

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Ask "why" questions.
    b. With guidance, formulate a question about a topic.
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Articulate and identify one's own place in the cultural fabric of the global community and respect others' cultural identities.
    b. With guidance, seek sources written by authors with diverse backgrounds.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Reflect at the end of the inquiry process and identify new or related ideas that would be interesting to pursue.
    b. Explore print, digital, and other resources to find information on a topic of personal interest.
    c. Work in teams to produce original works or solve problems.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. Make a list of all the possible sources of information that will help answer the questions or an information need.
    b. Use text features and illustrations to decide which resources are best to use and why.
5. Discover and innovate through experience and reflection.
    a. Create learning products for a variety of audiences and purposes.
    b. Use technology tools for independent and collaborative publishing activities.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Read, listen to, and view a range of resources for a variety of purposes (e.g., live the experiences of a character, answer questions, learn something new, explore personal interests).
    b. Recognize features of various genres and use different reading strategies for understanding.
    c. Connect personal feelings to emotions, characters, and events portrayed in a literary work.
    d. Set reading goals.
    e. Demonstrate knowledge of favorite authors and genres.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. With guidance and support, use technology appropriately by avoiding plagiarism and citing information.
    b. Articulate personal consequences of inappropriate use of information, technology, and media.
    c. With support, use digital tools responsibly by protecting personal information and respecting the privacy of others.
8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

## THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR FOURTH GRADE

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Ask "why" questions.
    b. With guidance, formulate a question about a topic.
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Articulate and identify one's own place in the cultural fabric of the global community and respect others' cultural identities.
    b. With guidance, seek sources written by authors with diverse backgrounds.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Reflect at the end of the inquiry process and identify new or related ideas that would be interesting to pursue.
    b. Explore print, digital, and other resources to find information on a topic of personal interest.
    c. Work in teams to produce original works or solve problems.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. Make a list of all the possible sources of information that will help answer the questions or an information need.
    b. Use text features and illustrations to decide which resources are best to use and why.
5. Discover and innovate through experience and reflection.
    a. Create learning products for a variety of audiences and purposes.
    b. Use technology tools for independent and collaborative publishing activities.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Read, listen to, and view a range of resources for a variety of purposes (e.g., live the experiences of a character, answer questions, learn something new, explore personal interests).
    b. Recognize features of various genres and use different reading strategies for understanding.
    c. Connect personal feelings to emotions, characters, and events portrayed in a literary work.
    d. Set reading goals.
    e. Demonstrate knowledge of favorite authors and genres.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. With guidance and support, use technology appropriately by avoiding plagiarism and citing information.
    b. Articulate personal consequences of inappropriate use of information, technology, and media.
    c. With support, use digital tools responsibly by protecting personal information and respecting the privacy of others.
8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

## THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR FIFTH GRADE

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Ask "why" questions.
    b. With guidance, formulate a question about a topic.
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Articulate and identify one's own place in the cultural fabric of the global community and respect others' cultural identities.
    b. With guidance, seek sources written by authors with diverse backgrounds.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Reflect at the end of the inquiry process and identify new or related ideas that would be interesting to pursue.
    b. Explore print, digital, and other resources to find information on a topic of personal interest.
    c. Work in teams to produce original works or solve problems.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. Make a list of all the possible sources of information that will help answer the questions or an information need.
    b. Use text features and illustrations to decide which resources are best to use and why.
5. Discover and innovate through experience and reflection.
    a. Create learning products for a variety of audiences and purposes.
    b. Use technology tools for independent and collaborative publishing activities.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Read, listen to, and view a range of resources for a variety of purposes (e.g., live the experiences of a character, answer questions, learn something new, explore personal interests).
    b. Recognize features of various genres and use different reading strategies for understanding.
    c. Connect personal feelings to emotions, characters, and events portrayed in a literary work.
    d. Set reading goals.
    e. Demonstrate knowledge of favorite authors and genres.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. With guidance and support, use technology appropriately by avoiding plagiarism and citing information.
    b. Articulate personal consequences of inappropriate use of information, technology, and media.
    c. With support, use digital tools responsibly by protecting personal information and respecting the privacy of others.
8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR SIXTH THROUGH EIGHTH GRADE

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Write questions independently based on key ideas or areas of focus.
    b. Refine questions based on the type of information needed.
    c. Pose questions that focus on “How do we know what we know?”
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Offer information and opinions at appropriate times in group discussions.
    b. Encourage others to share ideas and opinions.
    c. Accurately describe or summarize the ideas of others.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Ask questions of others in a group to elicit their information and opinions.
    b. Seek more than one point of view by using diverse sources.
    c. Read with purpose to investigate new ideas for classroom learning and personal exploration.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. Determine what information is needed to support an investigation and answer questions.
    b. Refine questions depending on the type of information needed (e.g., overview, big idea, specific detail, cause and effect, comparison).
    c. Seek opportunities to explore personal interests and questions.
5. Discover and innovate through experience and reflection.
    a. Create products that incorporate writing, visuals, and other forms of media to convey message and main points.
    b. Experiment with various types of technology tools for artistic and personal expression.
    c. Share reading, listening, and viewing experiences in a variety of ways and formats.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Independently locate and select information for personal, hobby, or vocational interests.
    b. Read, listen to, and view an increasingly wide range of genres and formats for recreation and information.
    c. Respond to images and feelings evoked by a literary work.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. With support, provide reference citations for all direct quotations and cite sources.
    b. With support, select and use digital tools and websites appropriately.
    c. Avoid plagiarism by rephrasing information in one’s own words.

8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

THE LIBRARY MEDIA AND INFORMATION LITERACY STANDARDS FOR NINTH THROUGH TWELFTH GRADE

1. Build new knowledge by inquiring, thinking critically, identifying problems, and developing strategies for solving problems.
    a. Formulate essential questions through reading, constructing hypotheses, research questions, and thesis statements.
    b. Refine questions to provide a framework for an inquiry and to fulfill the purpose of the research.
    c. Design questions that systematically test a hypothesis or validate a thesis statement.
    d. Develop questions that require making connections between ideas and events.
2. Demonstrate an understanding of and commitment to inclusiveness and respect for diversity in the learning community, including the distinct and unique cultural heritage of American Indians.
    a. Share relevant information to contribute to the learning of others through discussions and presentations.
    b. Contribute opinions and supporting evidence to group deliberations.
    c. Listen to opinions and evidence of others.
    d. Ask and respond to questions in group exchanges of ideas.
    e. Identify the value of and differences among potential resources and differing points of view.
    f. Actively seek the opinions of others and contribute positively to an environment in which all participants' ideas are shared and valued.
3. Work effectively with others to broaden perspectives and work toward common goals.
    a. Seek ideas and opinions from others.
    b. Describe ideas of others accurately.
    c. Participate in discussions to analyze information problems to suggest solutions.
    d. Work with others to select, organize, and integrate information and ideas from a variety of sources and formats.
    e. Seek consensus from a group, when appropriate, to achieve a stronger product.
    f. Apply conclusions or decisions to new situations.
    g. Model social skills that advance a team's ability to identify issues and problems and work on solutions.
    h. Work with others to solve problems and make decisions on issues, topics, and themes being investigated.
4. Make meaning for oneself by collecting, organizing, and sharing resources of personal relevance.
    a. Review the initial information need to clarify, revise, or refine the questions.
    b. Recognize that the purpose of an inquiry determines the type of questions and thinking required (e.g., defend a position in an historical context, design questions to test a hypothesis).
    c. Generate specific questions to focus the purpose of the research.
    d. Refine questions to provide a framework for the inquiry and to fulfill the purpose of the research.
    e. Independently pursue answers to self-generated questions.

f. Explore problems or questions for which there are multiple answers.

5. Discover and innovate through experience and reflection.
    a. Assess emotional impact of specific works on the reader or viewer.
    b. Express ideas through creative products in multiple formats using a variety of technology tools.
    c. Select presentation format to effectively communicate and support a purpose, argument, point of view, or interpretation
    d. Connect universal themes and ideas presented in various formats to the human experience.
    e. Create original products using a variety of technology tools to express personal learning.
    f. Use the most appropriate format to clearly communicate ideas to targeted audiences.
6. Exercise their freedom to read and demonstrate their ability to pursue personal interests.
    a. Select print, non-print, and digital materials based on personal interests and knowledge of authors.
    b. Read, listen to, and view information in a variety of formats to explore new ideas, form opinions, solve problems, and to connect to real-world issues.
    c. Routinely read, view, and listen for personal enjoyment, in order to learn, solve problems, and explore different ideas.
    d. Read widely to develop a global perspective and understand different cultural contexts.
    e. Actively preserve the rights of self and others to express ideas freely and pursue the right to read, view and listen.
7. Demonstrate safe, legal, and ethical creating and sharing of knowledge products.
    a. Follow fair use guidelines for text, visuals, and music in generating products and presentations.
    b. Practice responsible use of technology and describe personal consequences of inappropriate use.
    c. Demonstrate understanding of plagiarism by paraphrasing information or noting direct quotes.
    d. Credit all sources properly.
    e. Respect privacy of others.
8. Engage in authentic inquiry experiences about the distinct and unique cultural heritage of American Indians.

Administrative Rules of Montana Chapter 55

LIBRARY MEDIA SERVICES, K-12 10.55.709

| Current ARM | Recommendation | Modification |
|---|---|---|
| (1) The school library shall be housed in a central location, and each school shall have a licensed and endorsed library media specialist at the following ratio: | keep as is | |
| (a) 5 FTE for schools with 126-250 students; | keep as is | |
| (b) 1 FTE for schools with 251-500 students; | keep as is | |
| (c) 1 5 FTE for schools with 501-1000 students; | keep as is | |
| (d) 2 FTE for schools with 1001-1500 students; | keep as is | |
| (e) 2 5 FTE for schools with 1501-2000 students; | keep as is | |
| (f) 3 FTE for schools with 2001 or more students | keep as is | |
| (2) Schools of fewer than 126 students shall employ or contract with a licensed and endorsed school library media specialist | keep as is | |
| (3) If a district has fewer than 126 students, the district may utilize a consortium, multidistrict agreement, or interlocal cooperative to secure these services | keep as is | |

Administrative Rules of Montana Chapter 55

LIBRARY MEDIA PROGRAM DELIVERY STANDARDS 10.55.1801

| Current ARM | Recommendation | Modification |
|---|---|---|
| (1) In general, a basic program in library media shall: | | |
| **(a) meet the following conditions:** | | |
| (i) establish flexible scheduling to ensure that libraries respond to information needs, foster intellectual curiosity, and support learning; | modify | (i) establish ~~flexible~~ appropriate scheduling, fixed or flexible, to ensure that libraries respond to information needs, foster intellectual curiosity, and support learning; |
| (ii) ensure collaboration with classroom teachers of all disciplines to implement content area standards and to assist students in engaging in the inquiry/research process; | keep as is | |
| (iii) model and support the ethical use of information, adherence to copyright laws, and respect for intellectual property; and | keep as is | |
| (iv) advise the board of trustees on policy and rule pertaining to: | keep as is | |
| (A) developing and maintaining a library collection that is current, balanced, and reflects authentic historical and cultural contributions of Montana's American Indians and other minority and ethnic groups; | modify | (A) develop~~ing~~ and maintain~~ing~~ a physical and digital library collection that is current, balanced, and reflects authentic historical and cultural contributions of Montana's American Indians and other minority and ethnic groups; |
| (B) engaging in comprehensive long range planning to administer and manage, in a secure area, the human, financial, and physical resources of the library to locate, access, and use on-site resources that are organized and cataloged; and | modify | (B) engage~~ing~~ in comprehensive long range planning to administer and manage, in a secure area, the human, financial, digital, and physical resources of the library to locate, access, and use ~~on-site~~ resources that are organized and cataloged; and |

| | | |
|---|---|---|
| (C) implementing a viable collection development policy which includes the following components: | modify | (C) implement~~ing~~ a viable collection development policy which includes the following components: |
| **Current ARM** | **Recommendation** | **Modification** |
| (I) materials selection and de-selection; | keep as is | |
| (II) challenged materials procedure; | keep as is | |
| (III) intellectual/academic freedom statement; | keep as is | |
| (IV) confidentiality assurance; | keep as is | |
| (V) copyright guidelines; and | keep as is | |
| (VI) gifts and donations | keep as is | |
| (b) include the following practices: | | |
| (i) collaborate with classroom teachers of all disciplines to highlight and reinforce the commonalities and links between and among the curricular areas; | keep as is | |
| (ii) cooperate and join with other libraries, information agencies, and community resources in the sharing of materials; | keep as is | |
| (iii) encourage partnerships with information centers that use electronic information systems; and | modify | (iii) encourage partnerships with information centers that use providers of digital electronic content and information systems; and |
| (iv) participate in school-wide technology and telecommunications planning and promote its integration into all instructional programs | modify | (iv) participate in school-wide technology and telecommunications digital service and content planning and promote its integration into all instructional programs |