

Prepared Graduate Competencies in Science

The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduates:

- Observe, explain, and predict natural phenomena governed by Newton's laws of motion, acknowledging the limitations of their application to very small or very fast objects
- Apply an understanding of atomic and molecular structure to explain the properties of matter, and predict outcomes of chemical and nuclear reactions
- Apply an understanding that energy exists in various forms, and its transformation and conservation occur in processes that are predictable and measurable
- Analyze the relationship between structure and function in living systems at a variety of organizational levels, and recognize living systems' dependence on natural selection
- Explain and illustrate with examples how living systems interact with the biotic and abiotic environment
- Analyze how various organisms grow, develop, and differentiate during their lifetimes based on an interplay between genetics and their environment
- Explain how biological evolution accounts for the unity and diversity of living organisms
- Describe and interpret how Earth's geologic history and place in space are relevant to our understanding of the processes that have shaped our planet
- Evaluate evidence that Earth's geosphere, atmosphere, hydrosphere, and biosphere interact as a complex system
- Describe how humans are dependent on the diversity of resources provided by Earth and Sun

Prepared Graduate Competencies in Reading, Writing, and Communicating

The preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared Graduates:

- Collaborate effectively as group members or leaders who listen actively and respectfully pose thoughtful questions, acknowledge the ideas of others, and contribute ideas to further the group's attainment of an objective
- Deliver organized and effective oral presentations for diverse audiences and varied purposes
- Use language appropriate for purpose and audience
- Demonstrate skill in inferential and evaluative listening
- Interpret how the structure of written English contributes to the pronunciation and meaning of complex vocabulary
- Demonstrate comprehension of a variety of informational, literary, and persuasive texts
- Evaluate how an author uses words to create mental imagery, suggest mood, and set tone
- Read a wide range of literature (American and world literature) to understand important universal themes and the human experience
- Seek feedback, self-assess, and reflect on personal learning while engaging with increasingly more difficult texts
- Engage in a wide range of nonfiction and real-life reading experiences to solve problems, judge the quality of ideas, or complete daily tasks
- Write with a clear focus, coherent organization, sufficient elaboration, and detail
- Effectively use content-specific language, style, tone, and text structure to compose or adapt writing for different audiences and purposes
- Apply standard English conventions to effectively communicate with written language
- Implement the writing process successfully to plan, revise, and edit written work
- Master the techniques of effective informational, literary, and persuasive writing
- Discriminate and justify a position using traditional lines of rhetorical argument and reasoning
- Articulate the position of self and others using experiential and material logic
- Gather information from a variety of sources; analyze and evaluate the quality and relevance of the source; and use it to answer complex questions

- Use primary, secondary, and tertiary written sources to generate and answer research questions
- Evaluate explicit and implicit viewpoints, values, attitudes, and assumptions concealed in speech, writing, and illustration
- Demonstrate the use of a range of strategies, research techniques, and persistence when engaging with difficult texts or examining complex problems or issues
- Exercise ethical conduct when writing, researching, and documenting sources

Standards in Reading, Writing, and Communicating

Standards are the topical organization of an academic content area. The four standards of Reading, Writing, and Communicating are:

1. Oral Expression and Listening

Learning of word meanings occurs rapidly from birth through adolescence within communicative relationships. Everyday interactions with parents, teachers, peers, friends, and community members shape speech habits and knowledge of language. Language is the means to higher mental functioning, that which is a species-specific skill, unique to humans as a generative means for thinking and communication. Through linguistic oral communication, logical thinking develops and makes possible critical thinking, reasoning, development of information literacy, application of collaboration skills, self-direction, and invention.

Oral language foundation and written symbol systems concretize the way a student communicates. Thus, students in Colorado develop oral language skills in listening and speaking, and master the written language skills of reading and writing. Specifically, holding Colorado students accountable for language mastery from the perspectives of scientific research in linguistics, cognitive psychology, human information processing, brain-behavior relationships, and socio-cultural perspectives on language development will allow students to master 21st century skills and serve the state, region, and nation well.

2. Reading for All Purposes

Literacy skills are essential for students to fully participate in and expand their understanding of today's global society. Whether they are reading functional texts (voting ballots, a map, a train schedule, a driver's test, a job application, a text message, product labels); reference materials (textbooks, technical manuals, electronic media); or print and non-print literary texts, students need reading skills to fully manage, evaluate, and use the myriad information available in their day-to-day lives.

3. Writing and Composition

Writing is a fundamental component of literacy. Writing is a means of critical inquiry; it promotes problem solving and mastering new concepts. Adept writers can work through various ideas while producing informational, persuasive, and narrative or literary texts. In other words, writing can be used as a medium for reasoning and

making intellectual connections. As students arrange ideas to persuade, describe, and inform, they engage in logical critique, and they are likely to gain new insights and a deeper understanding of concepts and content.

4. Research and Reasoning

Research and Reasoning skills are pertinent for success in a postsecondary and workforce setting. Students need to acquire these skills throughout their schooling. This means students need to be able to distinguish their own ideas from information created or discovered by others, understand the importance of creating authentic works, and correctly cite sources to give credit to the author of the original work.

The Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science and Technical Subjects include a separate standard for Language. In this document, those Language expectations are integrated into the four standards above as appropriate

Standards in Science

Standards are the topical organization of an academic content area. The three standards of science are:

1. Physical Science

Students know and understand common properties, forms, and changes in matter and energy.

2. Life Science

Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.

3. Earth Systems Science

Students know and understand the processes and interactions of Earth's systems and the structure and dynamics of Earth and other objects in space.

Prepared Graduate Competencies in Social Studies

The prepared graduate competencies are the preschool through twelfth-grade concepts and skills that all students who complete the Colorado education system must master to ensure their success in a postsecondary and workforce setting.

Prepared graduates in social studies:

1. Use the tools, thinking, and practices of history, geography, economics, and civics to:
 - a. Solve problems, make decisions and analyze issues from multiple perspectives as a responsible member of society
 - b. Read, write, and communicate ideas

Prepared graduates in history:

1. Develop an understanding of how people view, construct, and interpret history
2. Analyze key historical periods and patterns of change over time within and across nations and cultures

Prepared graduates in geography:

1. Develop spatial understanding, perspectives, and personal connections to the world
2. Examine places and regions and the connections among them

Prepared graduates in economics:

1. Understand the allocation of scarce resources in societies through analysis of individual choice, market interaction, and public policy
2. Acquire the knowledge and economic reasoning skills to make sound financial decisions (PFL)

Prepared graduates in civics:

1. Analyze and practice rights, roles, and responsibilities of citizens

2. Analyze the origins, structure, and functions of governments and their impacts on societies and citizens

Colorado Academic Standards Social Studies

Standards are the topical organization of an academic content area. The four standards of social studies are:

1. History

History develops moral understanding, defines identity and creates an appreciation of how things change while building skills in judgment and decision-making. History enhances the ability to read varied sources and develop the skills to analyze, interpret and communicate.

2. Geography

Geography provides students with an understanding of spatial perspectives and technologies for spatial analysis, awareness of interdependence of world regions and resources and how places are connected at local, national and global scales.

3. Economics

Economics teaches how society manages its scarce resources, how people make decisions, how people interact in the domestic and international markets, and how forces and trends affect the economy as a whole. Personal financial literacy applies the economic way of thinking to help individuals understand how to manage their own scarce resources using a logical decision-making process of prioritization based on analysis of the costs and benefits of every choice.

4. Civics

Civics teaches the complexity of the origins, structure, and functions of governments; the rights, roles and responsibilities of ethical citizenship; the importance of law; and the skills necessary to participate in all levels of government.