

Cross-Disciplinary Standards

(with performance indicators)



CROSS-DISCIPLINARY STANDARDS

I. Key Cognitive Skills

A. Intellectual curiosity

1. Engage in scholarly inquiry and dialogue.

- examples
- Identify what is known, not known, and what one wants to know in a problem.
 - Conduct investigations and observations.
 - Cite examples or illustrations in which a clear-cut answer cannot be reached.

2. Accept constructive criticism and revise personal views when valid evidence warrants.

- examples
- Articulate own point of view and provide valid evidence to support findings.
 - Demonstrate willingness to take intellectual risks by investigating novel, controversial, or unpopular opinions or conclusions.
 - Examine alternative points of view, taking different roles to defend, oppose, and remain neutral on issues.
 - Recognize conflicting information or unexplained phenomena.

B. Reasoning

1. Consider arguments and conclusions of self and others.

- examples
- Know and apply logic to analyze patterns and descriptions and to evaluate conclusions.
 - Cite valid examples or illustrations that support the conclusions.
 - Question whether the claims and conclusions of self and others are supported by evidence.
 - Identify counter examples to disprove a conclusion.

2. Construct well-reasoned arguments to explain phenomena, validate conjectures, or support positions.

- examples
- Participate in a debate that is based on facts and has a logical structure.
 - Construct a visual presentation, including hypothesis, data, results, and conclusion.
 - Write a paper that addresses counter-arguments to advocated positions.
 - Recognize and apply techniques of statistical or probabilistic analysis to judge reliability of information.
 - Organize an argument separating fact from opinion.

3. Gather evidence to support arguments, findings, or lines of reasoning.

- examples
- Use different kinds of data (e.g., case studies, statistics, surveys, documents) to support an argument.
 - Evaluate evidence in terms of quality and quantity.
 - Describe limitations of data collection methods.

4. Support or modify claims based on the results of an inquiry.

- examples
- Refine claims and adjust a position in response to inquiry.
 - Review and check strategies and calculations, using alternative approaches when possible.

C. Problem solving

1. Analyze a situation to identify a problem to be solved.

- examples
- Represent and/or restate the problem in one or more ways (e.g., graph, table, equation), showing recognition of important details and significant parameters.

CROSS-DISCIPLINARY STANDARDS

- examples
- b. Break complex problems into component parts that can be analyzed and solved separately.
 - c. Apply previously learned knowledge to new situations.
 - d. Analyze a media report, identify any misuse of statistics, and suggest ways to more accurately depict this information.

2. Develop and apply multiple strategies to solving a problem.

- examples
- a. Use a range of standard methods, devices, techniques, and strategies to gather and analyze information.
 - b. Use knowledge gained from other subject areas to solve a given problem.

3. Collect evidence and data systematically and directly relate to solving a problem.

- examples
- a. Use general and specialized reference works and databases to locate sources.
 - b. Collect evidence and data directly related to solving the problem and eliminate irrelevant information.
 - c. Produce charts, graphs, and diagrams accurately, including scale, labeling, units, and organization.
 - d. Present the collected data visually, describe the data collection procedure, and defend choosing that procedure over other possibilities.

D. Academic behaviors

1. Self-monitor learning needs and seek assistance when needed.

- examples
- a. Ask questions to check for understanding or to clarify information.
 - b. Use a systematic method for recording, storing, and organizing materials and resources; avoid haphazard or messy accumulation of information.

2. Use study habits necessary to manage academic pursuits and requirements.

- examples
- a. Manage time effectively to complete tasks on time.
 - b. Demonstrate accurate note-taking.
 - c. Use the appropriate level of detail necessary to complete an assigned task.
 - d. Balance academic and non-academic activities to successfully participate in both.

3. Strive for accuracy and precision.

- examples
- a. Collect and report experimental data carefully and correctly.
 - b. Produce charts, graphs, and diagrams accurately, including scale, labeling, units, and organization.
 - c. Eliminate irrelevant information from an assignment.

4. Persevere to complete and master tasks.

- examples
- a. Persevere until a task is completed by working even when faced with uncertainty or open-ended assignments.
 - b. Seek assistance when needed to complete the assignment.
 - c. Recognize when a task is completed.

E. Work habits

1. Work independently.

- examples
- a. Plan a project, establish its parameters, and complete it with minimal supervision, seeking assistance accordingly.
 - b. Follow directions or procedures independently.
 - c. Complete assignments outside the classroom setting in a timely manner.

2. Work collaboratively.

- examples
- a. Work collaboratively with students from various cultural and ethnic backgrounds.
 - b. Distinguish between situations where collaborative work is appropriate and where it is not.

CROSS-DISCIPLINARY STANDARDS

- c. Work in small groups to investigate a problem or conduct an experiment.

- b. Compare and contrast coverage of a single topic from multiple media sources.

F. Academic integrity

1. Attribute ideas and information to source materials and people.

- examples
- a. Document the work of others, giving credit where credit is due and never claim credit for work that is not one's own.
 - b. Use standard bibliographic and reference citation formats, choosing the style appropriate to the subject and the audience.
 - c. Define plagiarism and articulate the consequences of academic dishonesty.

2. Evaluate sources for quality of content, validity, credibility, and relevance.

- a. Verify validity of a source within a submitted work.

3. Include the ideas of others and the complexities of the debate, issue, or problem.

- a. Present multiple perspectives of an issue.
- b. Represent accurately the data, conclusions, or opinions of others.

4. Understand and adhere to ethical codes of conduct.

- a. Follow copyright laws and restrictions.
- b. Use technology responsibly (e.g., avoiding malice, misrepresentation, or misleading use of information).

CROSS-DISCIPLINARY STANDARDS

II. Foundational Skills

A. Reading across the curriculum

1. Use effective prereading strategies.

- examples
- Use the title, knowledge of the author, and place of publication to make predictions about a text.
 - Use a table of contents to preview a text and understand its design.
 - Scan headline sections or other division markers, graphics, or sidebars to form an overview of a text.

2. Use a variety of strategies to understand the meanings of new words.

- examples
- Use context clues, including definitions, examples, comparison, contrast, cause and effect, and details provided in surrounding text.
 - Consult references (e.g., dictionary, thesaurus) effectively.
 - Understand notation specific to discipline (e.g., mathematical notation, scientific symbols).

3. Identify the intended purpose and audience of the text.

- examples
- Predict purpose and audience of a text based on the title, preface, and other features of a text.
 - Explain how the language of an effective text targets an intended audience.
 - Explain the importance of a technical and/or scientific article.

4. Identify the key information and supporting details.

- examples
- Outline a chapter of an informational text.
 - Summarize the major points in a text, and use graphic organizers (e.g., concept maps, diagrams) to organize ideas and concepts in a visual manner.

- examples
- Analyze connections between major and minor ideas.
 - Identify and define key terminology from technical and/or scientific documents.

5. Analyze textual information critically.

- examples
- Identify faulty premises in an argument.
 - Identify stated and implied assumptions.
 - Identify conclusions unsupported by sufficient evidence in informational texts.
 - Use inductive and deductive reasoning.
 - Draw conclusions based on evidence, support, or data through logical reasoning.
 - Compare a primary source and an interpretation in a textbook.

6. Annotate, summarize, paraphrase, and outline texts when appropriate.

- examples
- Outline an informational or literary text.
 - Annotate text for comprehension and analysis.
 - Summarize an article to demonstrate comprehension.
 - Paraphrase a writer's ideas or findings.

7. Adapt reading strategies according to structure of texts.

- examples
- Identify a variety of textual forms and genres (e.g., long and short texts) and adapt reading strategies accordingly.
 - List strategies to use during reading, including:
 - Anticipate and predict what information the text is likely to contain.
 - Monitor understanding by self-questioning.
 - Use strategies (e.g., mental imagery, paraphrasing, information in glossaries) to reexamine the text if comprehension fails.
 - Reread difficult passages.
 - Read ahead for additional clarification.

Note: The Performance Indicators are not prescriptive, but serve as examples of ways students demonstrate the performance expectation.

CROSS-DISCIPLINARY STANDARDS

- Seek assistance for clarification.
 - Self-monitor and summarize the information gained.
- c. Explain how form or genre communicates meaning.

8. Connect reading to historical and current events and personal interest.

- a. Locate an article or source that relates to a class topic and explain the relevance.

B. Writing across the curriculum

1. Write clearly and coherently using standard writing conventions.

examples

- a. Prepare a topic proposal that specifies a purpose and justifies the choice of audience to achieve that purpose.
- b. Craft a thesis statement that articulates a position and list relevant evidence and examples in logical groupings.
- c. Use symbols, diagrams, graphs, and words to communicate ideas.
- d. Use appropriate terminology and data expression to communicate information in a concise manner.
- e. Use a variety of reference guides for citation conventions, grammar, mechanics, and punctuation.

2. Write in a variety of forms for various audiences and purposes.

examples

- a. Present an argument supported by relevant evidence, examples, and counterarguments.
- b. Prepare a summary or abstract of a journal article or report, extracting in brief form the pertinent information.
- c. Evaluate articles by analyzing the study design, data source, graphical representation of data, and analyzed data results reported (or not reported).
- d. Write a reflection about the process selected to conduct research or solve a problem.

- e. Write accurate and understandable lab reports and technical documents.

3. Compose and revise drafts.

examples

- a. Submit a writing assignment to be proofread by a teacher, parent, or other student. Revise the paper, incorporating the constructive criticism when appropriate.
- b. Edit text for correct spelling, capitalization, and punctuation.
- c. Edit for appropriate tense and voice.
- d. Edit for correct word use.
- e. Use a variety of reference guides for citation conventions, grammar, mechanics, and punctuation.
- f. Submit a final draft that is easily read and has few or no grammatical or spelling errors.

C. Research across the curriculum

1. Understand which topics or questions are to be investigated.

examples

- a. Formulate research questions.
- b. Use strategies like those in the writing process to generate questions and areas to pursue.
- c. Consult previous studies or conduct interviews with experts to identify questions central to a research topic.
- d. Propose explicit, testable hypotheses, using the “if ..., then ...” format.

2. Explore a research topic.

examples

- a. Produce an annotated list of sources consulted, differentiating among primary, secondary, and other sources and explain their relevance to the research topic.
- b. Outline the most significant controversies or questions on a research topic.
- c. Plan an investigative study.
- d. Explain reasons for valid competing points of view of a given topic.

CROSS-DISCIPLINARY STANDARDS

3. Refine research topic based on preliminary research and devise a timeline for completing work.

- examples
- Gather information from a variety of relevant sources.
 - Use general and specialized reference works and databases to locate sources.
 - Locate electronic sources, when appropriate, using advanced search strategies.
 - Select an appropriate range of source materials.
 - Analyze a wide range of sources, including technical texts, primary and secondary sources, conflicting points of view, and interdisciplinary research when appropriate.
 - Design and carry out hands-on experimental investigations, choosing appropriate apparatuses, identifying controls and variables, tentatively predicting the outcome of the procedures, and evaluating whether actual results agree with predicted results.
 - Use numerical and mathematical tools such as software, including databases, spreadsheets, and other tools, in investigations and explanations.

4. Evaluate the validity and reliability of sources.

- examples
- State explicitly characteristics or identifying features that indicate accuracy or reliability of sources, to determine whether sources are biased, incomplete, or otherwise unreliable.
 - Follow a set of criteria to determine the validity and reliability of sources.
 - Identify claims found in one or more of the sources that require support or verification, and evaluate the information's validity.
 - Evaluate the data presented in graphics, tables, charts, and maps when appropriate to the topic.

5. Synthesize and organize information effectively.

- examples
- Select quotations and evidence that support the thesis.
 - Determine what evidence best supports conclusions.
 - Use well-organized strategies to collect and organize information gathered.
 - Determine the best order for presenting evidence that supports conclusions.

6. Design and present an effective product.

- examples
- Determine the best order for presenting major and minor points.
 - Design a report using features such as headings and graphics appropriate to the writing task.
 - Use a citation system specified by or appropriate to the assignment.

7. Integrate source material.

- examples
- Integrate source material into text by a combination of accurately summarizing, paraphrasing, and quoting.
 - Balance use of source material with relevant explanations.
 - Use source material ethically.
 - Understand and avoid all types of plagiarism.

8. Present final product.

- Use appropriate media for presentation of research results.
- Document sources using a standard format appropriate to the subject area.

D. Use of data

1. Identify patterns or departures from patterns among data.

- examples
- Identify patterns from multiple representations of data such as graphical and tabular forms.
 - Review current news events and evaluate possible connections (e.g., linking economic data with political events).

CROSS-DISCIPLINARY STANDARDS

2. **Use statistical and probabilistic skills necessary for planning an investigation, and collecting, analyzing, and interpreting data.**

examples

- a. Create representations of data (e.g., data tables, correctly labeled and scaled graphs, narrative descriptions).
- b. Evaluate a given published report for missing information and misuse of data.

3. **Present analyzed data and communicate findings in a variety of formats.**

- a. Compose a written document detailing a research project.
- b. Use appropriate visuals and statistical results to convey findings to a specified audience.

E. Technology

1. **Use technology to gather information.**

examples

- a. Use the Internet or other appropriate technologies to post survey questions on an assigned topic.
- b. Use devices to measure physical properties.
- c. Use online databases to access scholarly work on an assigned research topic.

2. **Use technology to organize, manage, and analyze information.**

- a. Use data analysis software to analyze survey results.
- b. Use spreadsheets to manage and organize statistical data.

3. **Use technology to communicate and display findings in a clear and coherent manner.**

examples

- a. Create spreadsheets and graphs to communicate findings in a presentation that includes graphics, visuals, or other supporting images.
- b. Utilize technology to present information and/or data in a variety of ways.

4. **Use technology appropriately.**

examples

- a. Explain how technology is a useful and effective tool to communicate findings.
- b. Identify when technology may not be necessary or appropriate to communicate findings.
- c. Formulate strategies to communicate findings with and without technology.