**Disciplinary Literacy in North Dakota Content Standards**

Literacy and text are specialized across the disciplines. Each discipline has a unique way of using text to  create, disseminate, and evaluate knowledge. Strategies employed by learners as they encounter  disciplinary texts come from the demands of the text and the purpose of the specific discipline.  The information below identifies some of the strategies for disciplinary literacy in various disciplines and  aspects of the specific content standards within that discipline that refer to those strategies.

**Computer Science and Cybersecurity**

Disciplinary Literacy in Computer Science and Cybersecurity focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Evaluate the reliability of  content from different  websites, authors, and sources. • Exchange ideas within and  across communities.  • Read and use technical  manuals and information  about innovative practices in  technology.  • Understand the meaning of  technical vocabulary.  • Collect, organize, and analyze  data. | • Create and communicate  content using a variety of  digital media options.  • Determine the most effective  way to convey content.  • Represent ideas symbolically  (e.g., color, sound, images) to  communicate.  • Collect and represent data. • Create algorithms to reflect  daily life processes.  • Apply technical vocabulary in  writing. | • Identify strengths and  weaknesses of digital platforms  for conveying information. • Apply knowledge about  appropriate and safe online  behavior.  • Develop fluency with the  features of digital technology  used.  • Collaborate with others to  exchange ideas and create a  product.  • Edit work and seek feedback  about clarity, message, and  impact.  • Evaluate the impact of online  usage on digital identity.  • Find technical solutions to  problems. |

The North Dakota Computer Science and Cybersecurity Content Standards provide opportunities to  address disciplinary literacy within the following concepts:

• **Computing Devices and Systems**: This concept provides opportunities to embed disciplinary  literacy as learners develop an understanding of how networks, hardware, and software function  and interact, fostering adaptable skills for digital environments.

• **Algorithms and Computational Thinking**: This concept provides opportunities to embed  disciplinary literacy as learners develop and apply a basic understanding of algorithms and  computational thinking, enhancing problem-solving and critical-thinking skills.

• **Impacts of Computing**: This concept provides opportunities to embed disciplinary literacy as  learners understand how technology shapes individuals and the world and influences safety policy,  law, and ethics.

• **Digital Citizenship**: This concept provides opportunities to embed disciplinary literacy as learners  practice responsible digital consumption, creation, communication, and interaction.  • **Security**: This concept provides opportunities to embed disciplinary literacy as learners gain a  foundational understanding of safe and best practices for data and system security, including  information, network, and physical security*.*

**Fine Arts**

Disciplinary Literacy in the Fine Arts focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Find ideas and inspiration. • Search for innovative  practices.  • Read reviews considering  the perspectives of others. • Understand symbols and  technical details related to  the discipline.  • Connect artistic ideas,  theories, and works to the  societal, cultural, or  historical context.  • Compare experiences with  artists through biographies,  articles, blogs, etc.  • Understand specialized  vocabulary.  • Learn about the instruments  and tools used within the  artistic discipline. | • Evaluate artistic works. • React to artistic works.  • Compare genres, styles, and  performance techniques.  • Articulate ideas and explain  their evolution and/or the  process used.  • Analyze artistic works.  • Interpret the meaning,  ideas, and intent of artistic  work. | • Create artistic ideas and  works.  • Analyze artistic works by  applying knowledge of  artistic elements and genres. • Refine or complete artistic  work.  • Apply problem-solving skills  when creating artistic work. • Experiment and practice to  develop and refine skills,  craft, and techniques.  • Determine how to convey  meaning through the  presentation of artistic  works. |

The North Dakota Content Standards for Music, Visual Arts, Media Arts, Dance, and Theatre Arts address  disciplinary literacy within artistic processes embedded in the standards’ four strands.

• **Creating**: These standards embed the critical thinking skills of disciplinary literacy as artistic works  are created and refined.

• **Presenting/Performing/Producing**: These standards embed disciplinary literacy skills as artistic  works are shared, feedback is received, reflections on the process occur, and refinements are  made.

• **Responding**: These standards provide opportunities to embed reading and writing disciplinary  literacy skills as artistic works are analyzed and interpreted.

• **Connecting**: These standards provide opportunities to embed disciplinary literacy skills as  connections are made with the societal, cultural, or historical contexts in which artistic works were  created. Comparing works, artists, or oneself also creates an opportunity to apply disciplinary  literacy skills.

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**Health**

Disciplinary Literacy in Health focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Read information  objectively.  • Read for facts, then cause/ effect, then application.  • Interpret the meaning of  data, sketches, and charts. • Determine the validity and  quality of evidence and  sources.  • Understand specialized  vocabulary.  • Read for details and precise  concept interpretation.  • Research new discoveries,  findings, and treatments.  • Increase understanding of  health-related challenges  and perspectives.  • Research answers to health related questions.  • Seek evidence to form  theories. | • Use precise wording and  terminology.  • Compose phrases, bullets,  graphs, or sketches.  • Favor passive voice.  • Seek exact information on craft.  • Distinguish facts from  opinions.  • Communicate in a  systematic, precise, and  objective format.  • Examine the science and  chemistry behind  symptoms, feelings, and  behaviors. | • Curiosity and personal  interests focus learning.  • Seek connections and  cause/effect relationships.  • Identify the need for more  data.  • Consider new hypotheses or  evidence.  • Contemplate the interplay  of health-related factors.  • Apply new information to  actions and decisions. |

The North Dakota Health Content Standards provide opportunities to address disciplinary literacy within  the following standards:

• Analyze the influence of factors on healthy behaviors.

• Access valid health information, products, and services.

• Apply interpersonal communication skills.

• Use decision-making skills.

• Apply goal-setting skills.

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**Indigenous and World Languages**

Disciplinary Literacy in the Indigenous and World Languages focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Use of cognates to  determine meaning.  • Infer vocabulary meaning  from context.  • Apply and transfer reading,  decoding, and  comprehension skills to  works in the target  language.  • Reading works orally to  “hear” the language.  • Make predictions to  increase understanding.  • Read to consider cultural  practices and perspectives. • Analyze cultural practices,  traditions, and perspectives  within a societal, cultural, or  historical context. | • Apply the rules of the target  language regarding syntax  and orthography when  writing.  • Analyze and imitate  patterns, structures, and  organizations of mentor  texts.  • Prioritize ideas over  correctness in syntax and  spelling.  • Create presentations of  information in the target  language.  • Analyze the contributions of  the culture studied.  • Reflect on experiences  engaging with target  language communities and  experiences interacting with  those communities. | • Tell stories orally to “hear”  the language.  • Transfer skills from the  native language to the  target language.  • Use the three modes of  communication  (interpersonal, interpretive,  and presentational).  • Objectively consider  different points of view.  • Identify similarities and  differences in cultures.  • Focus on approximations  and practice using the  target language. |

The North Dakota Indigenous and World Language Content Standards address disciplinary literacy within  the strands of the standards.

• **Communication**: This strand embeds disciplinary literacy through the interpersonal, interpretive,  and presentational communication skills essential to studying languages.

• **Cultures**: This strand embeds disciplinary literacy skills as cultural practices, perspectives, and  products are analyzed to increase the interaction and understanding of the culture studied. • **Connections**: This strand allows for embedding disciplinary literacy skills as connections are made  with the target language and native language. Another opportunity exists as learners acquire  information and diverse perspectives from information acquired regarding the target language  and compare it to the native language.

• **Comparisons**: This strand provides opportunities to embed disciplinary literacy skills as learners  compare the language and culture studied with their own.

• **Communities**: This strand provides opportunities to embed disciplinary literacy skills as students  interact with communities where the target language is spoken.

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**Library Media**

Disciplinary Literacy in Library Media focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Identify the strengths and  weaknesses of different  search engines.  • Use and evaluate multiple  online sources.  • Evaluate the reliability of  content from different  websites, authors, and  sources.  • Exchange ideas within and  across communities.  • Synthesize input from  multiple sources. | • Create and communicate  content using a variety of  digital media options.  • Use the most effective  platform to convey  information.  • Determine the most  effective way to convey  content.  • Represent ideas  symbolically (e.g., color,  sound, images) to  communicate and persuade. | • Identify strengths and  weaknesses of digital  platforms for conveying  information.  • Apply knowledge about  appropriate and safe online  behavior.  • Develop fluency with the  features of digital  technology used.  • Make design decisions  based on purpose and the  audience's point of view.  • Collaborate with others to  exchange ideas and create a  product.  • Edit work and seek  feedback about clarity,  message, and impact. |

The North Dakota Library Media Content Standards provide opportunities to address disciplinary literacy  within the following strands:

• **Information Literacy**: This strand provides opportunities to embed disciplinary literacy as  learners access, use, and evaluate sources to research and share information.

• **Digital Citizenship**: This strand provides opportunities to embed disciplinary literacy as students  communicate, collaborate, and interact within the digital environment.

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**Mathematics**

Disciplinary literacy in mathematics focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Read critically for details to  help find solutions to  problems.  • Look for patterns and  relationships.  • Figure out symbols and  abstract ideas.  • Ask questions. | • Explain, justify, describe,  estimate, and analyze.  • Write number expressions  and formulas.  • Apply mathematical  vocabulary.  • Include reasons and  examples. | • Apply previous  understanding and look for  patterns and connections.  • Estimate, generalize, and  find exceptions.  • Apply mathematical  principles.  • Apply mathematical  reasoning.  • Use authentic situations. |

*“Disciplinary Literacy: A shift that Makes Sense”* Releah Lent (2017)

The North Dakota Mathematics Content Standards address disciplinary literacy in math attributes.

• **Problem-Solving**: This attribute includes the practice of making sense of problems, persevering  in solving them, and attending to precision.

• **Connections**: This attribute includes looking for and using the structure and looking for and  expressing regularity in repeated reasoning.

• **Reasoning and Proof**: This attribute includes the practices of modeling and using tools  strategically, reasoning abstractly and quantitatively, and communicating by constructing viable  arguments and critiquing the reasoning of others.

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**Physical Education**

Disciplinary Literacy in Physical Education focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • “Read” live or recorded  physical performances,  paying attention to details  (e.g., form and technique,  strategy, individual errors,  pivotal moments).  • “Read” environments for  safety considerations and  risks.  • Read and understand  specialized vocabulary and  phrases.  • “Read” a physical  performance and evaluate  the strengths and  weaknesses of individuals  and teams.  • Identify perspectives  provided in blogs, articles,  or when listening to  commentary.  • Translate symbols,  diagrams, illustrations, and  charts into concepts.  • Identify themes of  perseverance, overcoming  obstacles, and learning  from mistakes in novels,  sports casts, articles, and  movies. | • Use succinct sentences or  phrases to describe details. • Compose and defend  arguments based on  evidence and expert  sources.  • Communicate with data,  charts, diagrams, sketches,  and symbols.  • Use precise vocabulary and  technical language when  describing movement.  • Express analysis of physical  movement.  • Provide constructive  feedback in movement  settings.  • Note similarities and  differences between  physical activities. | • Visualize movements from  verbal or written  descriptions.  • Analyze problems and  propose solutions related  to physical fitness,  performance, or pace of  progress.  • Identify and articulate  personal fitness goals.  • Make connections between  specific conditioning  practices and strength and  agility.  • Communicate the priorities  of cooperation and  selflessness in sports.  • Identify and articulate the  cause-and-effect  relationship between  physical activity and health,  mood, self-discipline, and  social interaction.  • Evaluate written and oral  feedback.  • Interpret and analyze  numerical data.  • Interpret fitness findings  gathered from technology. • Analyze details related to  game rules and regulations. |

The North Dakota Physical Education Content Standards provide opportunities to address disciplinary  literacy within the following standards:

• **3-5.MM.1 Choice.** Express how personal interests influence participation in physical activity. • **3-5.MM.2 Resilience.** List strengths and growth opportunities through movement and  opportunities for practice for individual improvement.

• **3-5.MM.3 Reflection.** Reflect on physical activity experiences.

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• **K-2.MM.4 Goal Setting.** Set observable short-term goals to enhance fitness development. • **3-5.MM.4 Goal Setting.** Set observable and attainable long-term goals to enhance fitness  development.

• **K-2.KM.4 Body Responses to Movement.** Identify physiological changes in the body during  physical activities.

• **3-5.KM.4 Body Responses to Movement.** Describe how physical activity influences  physiological changes in the body.

• **K-2.KM.5 Warm-Up/Cool-Down.** Identify how warm-up and cool-down affect the body. • **K-2.KM.6 Dimensions of Health.** Identify how physical activity supports each dimension of  health.

• **3-5.KM.6 Dimensions of Health.** Explain how physical activity supports each dimension of  health.

• **K-2.KM.5 Warm-Up/Cool-Down.** Identify how warm-up and cool-down affect the body. • **3-5.KM.6 Warm-Up/Cool-Down.** Describe how warm-up and cool-down affect the body. • **6-8.KM.10 Warm-Up/Cool-Down.** Identify and demonstrate dynamic and static stretching to  exercise in warm-up and cool-down activities.

• **6.KM.6 Principles of Exercise.** Identify the principles of exercise.

• **6-8.KM.8 Target Heart Rate.** Define resting and target heart rate and describe their  relationship to aerobic fitness and the Borg Rating of Perceived Exertion (RPE) Scale. • **6.PSS.12 Feedback.** Provide and/or accept constructive feedback.

• **6-8.MM.2 Reflection.** Reflect on physical activity experiences specifically related to personal  meaning and enjoyment.

• **6.KM.9 Anatomy.** Identify the major muscles.

• **7.KM.9 Anatomy.** Identify the major muscles and give an example of exercises that utilize that  muscle group.

• **8.KM.9 Anatomy.** Identify the major muscle groups and give examples of exercises that utilize  that muscle group.

• **6-8.KM.10 Warm-Up/Cool-Down.** Identify and demonstrate dynamic and static stretching to  exercise in warm-up and cool-down activities.

• **6-8.PSS.11 Communication.** Apply communication skills to negotiate strategies and tactics in  physical activities.

• **6.MM.4 Goal Setting.** Set a goal based on examining individual ability in a physical activity  setting.

• **7.MM.4 Goal Setting.** Set a goal and create action steps for a goal based on an examination  of individual ability in a physical activity setting.

• **8.MM.4 Goal Setting.** Set a goal, create action steps, and reflect on goals by examining individual ability in a physical activity setting.

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(continued) The North Dakota Physical Education Content Standards provide opportunities to address disciplinary literacy with the following standards:

• **L1.KM.1** Analyze motor performance of self and/or others about movement concepts and  principles

• **L1.KM.3** Use technology to analyze and improve motor performance

• **L1.KM.4** Evaluate risks and identify safety considerations for physical activities. • **L1.KM.7** Use technology to analyze exertion and fitness levels.

• **L1.KM.8** Develop a personal fitness plan to improve one health-related fitness component • **L1.KM.11** Identify valid resources for physical activity and fitness

• **L1.PSS.4** Analyze ethical situations in physical activity, both in and outside of physical  education, and how choices impact self and others

• **L1.PSS.8** Encourage, support, and positively contribute when working with peers in a physical  activity setting, both in and outside physical education.

• **L1.PSS.9** Understand and respond constructively to cultural values, traditions, and differences in  physical activity settings both in and outside physical education.

• **L1.MM.1** Assess personal strengths, interests, and growth opportunities and how they  influence the level of challenge selected in fitness and physical activities.

• **L1.MM.7** Set a fitness goal and develop a progressive action plan.

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**Science**

Disciplinary literacy in science focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Ask “Why?” questions.  • Interpret data, charts, and  illustrations.  • Understand concepts and  vocabulary.  • Determine the validity of  sources and quality of  evidence presented.  • Read closely to pay  attention to details. | • Use precise scientific  vocabulary.  • Use passive voice.  • Writing favors the exactness  of the information.  • Synthesize evidence and  focus on methods used to  gather evidence.  • Include phrases, bullets,  graphs, or sketches. | • Create questions based on  curiosity.  • Rely on prior knowledge or  research.  • Consider new evidence or a  conclusion (hypothesis).  • Propose explanations.  • Create solutions in authentic  situations. |

*“Disciplinary Literacy: A shift that Makes Sense”* Releah Lent (2017)

The North Dakota Science Content Standards address disciplinary literacy with Science and Engineering  Practices.

• Ask questions and define problems.

• Develop and use models.

• Plan and carry out investigations.

• Analyze and interpret data.

• Use mathematical and computational thinking.

• Construct explanations and design solutions.

• Engage in argument from evidence.

• Obtain, evaluate, and communicate information.

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**Social Studies**

Disciplinary literacy in social studies focuses on the following:

|  |  |  |
| --- | --- | --- |
| **Reading** | **Writing** | **Thinking** |
| • Interpret primary and  secondary sources.  • Identify bias, propaganda,  and logical fallacies.  • Think sequentially.  • Compare events, accounts,  documents, and visuals.  • Use context to determine  word meaning.  • Consider time period and  point(s) of view (from  multiple perspectives). | • Create timelines  accompanied by narratives. • Synthesize information or  evidence from multiple  sources.  • Organize ideas coherently. • Create argumentative  essays.  • Weigh multiple ideas and  large quantities of  information. | • Create narratives.  • Use valid primary and  secondary sources to guide  thoughts.  • Compare/contrast causes  and effects.  • Consider inquiries across  long periods.  • Recognize bias,  propaganda, and logical  fallacies. |

*“Disciplinary Literacy: A shift that Makes Sense”* Releah Lent (2017)

The North Dakota Social Studies Content Standards included the 2017 English Language Arts Standards  for disciplinary literacy in the document’s appendices. These standards focus on the following:

• Read the text closely and cite textual evidence.

• Summarize key details, central themes, or ideas.

• Analyze interactions of individuals, events, or ideas from the text.

• Interpret vocabulary used in the text.

• Analyze text structure and points of view expressed in text.

• Evaluate and analyze content presented in media, visuals, videos, tables, graphs, charts, maps, or  text.

• Analyze and evaluate specific arguments and claims and the validity and sufficiency of reasoning  and evidence presented.

• Use valid, sufficient, and relevant evidence to support claims in arguments.

• Organize complex ideas and information reported or presented clearly.

• Gather information, evaluate multiple sources, and cite materials accurately when reporting  findings from research.

• Consider the audience, task, and purpose when analyzing primary and secondary sources and  presenting findings.

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