WISCONSIN STANDARDS FOR

Information and Technology Literacy

Wisconsin Department of Public Instruction

Adopted November 2017

WISCONSIN STANDARDS FOR
Information and Technology Literacy (ITL)

Wisconsin Department of Public Instruction
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Madison, Wisconsin

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Foreword

Information and Technology Literacy has significant value for students to support learning across all content areas. Our students are living in a digital world where communication skills, critical thinking skills, collaboration, and creativity are necessary to solve real-world problems. These are the skills and characteristics all students need to be career and college ready. Equitable access is vital to allow educators across the state to leverage digital tools and resources to personalize learning, engage students, and empower them to take ownership of their classroom experiences.

Wisconsin has refreshed the state Digital Learning Plan (2016) to support digital learning strategic goals for student learning. These goals ensure equitable access to learning opportunities for all students that are applied, engaged, and personalized. The plan identifies key elements for districts to create a shared vision to support digital learning experiences for all students that includes broadband and robust infrastructure, data privacy and security, and high-quality professional learning that is innovative and empowers digital leadership.

To clearly identify what students should be able to know and do across all content areas with information, media, and digital literacy; the Wisconsin Department of Public Instruction has created the **Wisconsin Standards for Information and Technology Literacy (ITL)**. These new ITL standards provide local districts a framework for integration across curriculum, instructional practices, and assessment strategies. This integration is best supported by a district- and building-level collaborative team using a planning and support model to ensure the equitable access of learning for all students.

The integration of information, media, and literacy into schools creates learning experiences for all students that are relevant, rigorous, and authentic. We need to ensure students gain the skills and knowledge needed to be successful, contributing members of a global society. The adoption of these standards will contribute to an enhanced learning experience for all students by allowing them to take ownership of their learning to make learning more meaningful.

Tony Evers, PhD
State Superintendent

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Section I

Wisconsin's Approach to Academic Standards

Purpose of the Document

The purpose of this guide is to improve Information and Technology Literacy (ITL) skills and knowledge for students and for communities. The Wisconsin Department of Public Instruction (DPI) has developed standards to assist Wisconsin educators and stakeholders in understanding, developing, and implementing Information and Technology Literacy into course offerings and curriculum in school districts across Wisconsin.

This publication provides a vision for student success and follows *The Guiding Principles for Teaching and Learning (2011)*. In brief, the principles are:

1. Every student has the right to learn.
2. Instruction must be rigorous and relevant.
3. Purposeful assessment drives instruction and affects learning.
4. Learning is a collaborative responsibility.
5. Students bring strengths and experiences to learning.
6. Responsive environments engage learners.

Program leaders will find the guide valuable for making decisions about:

- Program structure and integration
- Curriculum redesign
- Staffing and staff development
- Scheduling and student grouping
- Facility organization
- Learning spaces and materials development
- Resource allocation and accountability
- Collaborative work with other units of the school, district and community

What Are the Academic Standards?

Wisconsin Academic Standards specify what students should know and be able to do in the classroom. They serve as goals for teaching and learning. Setting high standards enables students, parents, educators, and citizens to know what students should have learned at a given point in time. In Wisconsin, all state standards serve as a model. Locally elected school boards adopt academic standards in each subject area to best serve their local communities. We must ensure that all children have equal access to high-quality education programs. Clear statements about what students must know and be able to do are essential in making sure our schools offer opportunities to get the knowledge and skills necessary for success beyond the classroom.

Adopting these standards is voluntary. Districts may use the academic standards as guides for developing local grade-by-grade level curriculum. Implementing standards may require some school districts to upgrade school and district curriculums. This may result in changes in instructional methods and materials, local assessments, and professional development opportunities for the teaching and administrative staff.

What is the Difference Between Academic Standards and Curriculum?

Standards are statements about what students should know and be able to do, what they might be asked to do to give evidence of learning, and how well they should be expected to know or do it. Curriculum is the program devised by local school districts used to prepare students to meet standards. It consists of activities and lessons at each grade level, instructional materials, and various instructional techniques. In short, standards define what is to be learned at certain points in time, and from a broad perspective, what performances will be accepted as evidence that the learning has occurred. Curriculum specifies the details of the day-to-day schooling at the local level.

Developing the Academic Standards

DPI has a transparent and comprehensive process for reviewing and revising academic standards. The process begins with a notice of intent to review an academic area with a public comment period. The State Superintendent's Standards Review Council examines those comments and may recommend revision or development of standards in that academic area. The state superintendent authorizes whether or not to pursue a revision or development process. Following this, a state writing committee is formed to work on those standards for all grade levels. That draft is then made available for open review to get feedback from the public, key stakeholders, educators, and the legislature with further review by the State Superintendent's Standards Review Council. The state superintendent then determines adoption of the standards.

Aligning for Student Success

To build and sustain schools that support every student in achieving success, educators must work together with families, community members, and business partners to connect the most promising practices in the most meaningful contexts. The release of the Wisconsin Standards for Information and Technology Literacy provides for the first time a set of important academic standards for school districts to implement. This is connected to a larger vision of every child graduating college and career ready. The graphic below illustrates the relationship between academic standards and other critical principles and efforts that function together to educate every child to graduate college and career ready. Here, the vision and set of Guiding Principles form the foundation for building a supportive process for teaching and learning rigorous and relevant content. The following sections articulate this integrated approach to increasing student success in Wisconsin schools and communities.

Relating the Academic Standards to All Students

Grade-level standards should allow ALL students to engage, access, and be assessed in ways that fit their strengths, needs, and interests. This applies to the achievement of students with IEPs (individualized education plans), English learners, and gifted and talented pupils, consistent with all other students. Academic standards serve as the foundation for individualized programming decisions for all students.

Academic standards serve as a valuable basis for establishing concrete, meaningful goals as part of each student's developmental progress and demonstration of proficiency. Students with IEPs must be provided specially designed instruction that meets their individual needs. It is expected that each individual student with an IEP will require unique services and supports matched to their strengths and needs in order to close achievement gaps in grade-level standards. Alternate standards are only available for students with the most significant cognitive disabilities.

Gifted and talented students may achieve well beyond the academic standards and move into advanced grade levels or into advanced coursework.

Our Vision: Every Child a Graduate, College and Career Ready

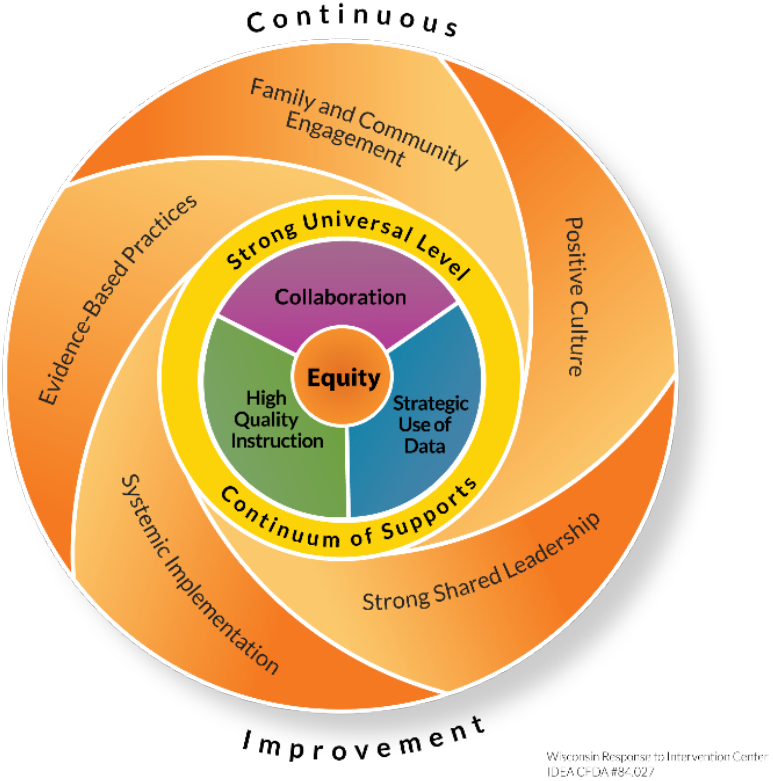
We are committed to ensuring every child graduates from high school academically prepared and socially and emotionally competent. A successful Wisconsin student is proficient in academic content and can apply their knowledge through skills such as critical thinking, communication, collaboration, and creativity. The successful student will also possess critical habits such as perseverance, responsibility, adaptability, and leadership. This vision for every child as a college and career ready graduate guides our beliefs and approaches to education in Wisconsin.

Guided by Principles

All educational initiatives are guided and impacted by important and often unstated attitudes or principles for teaching and learning. *The Guiding Principles for Teaching and Learning (2011)* emerge from research and provide the touchstone for practices that truly affect the vision of Every Child a Graduate Prepared for College and Career. When made transparent, these principles inform what happens in the classroom, direct the implementation and evaluation of programs, and most importantly, remind us of our own beliefs and expectations for students.

Ensuring a Process for Student Success

For Wisconsin schools and districts, implementing the *Framework for Equitable Multi-Level Systems of Supports (2017)* means providing equitable services, practices, and resources to every learner based upon responsiveness to effective instruction and intervention. In this system, high-quality instruction, strategic use of data, and collaboration interact within a continuum of supports to facilitate learner success. Schools provide varying types of supports with differing levels of intensity to proactively and responsibly adjust to the needs of the whole child. These include the knowledge, skills, and habits learners need for success beyond high school, including developmental, academic, behavioral, social, and emotional skills.



Connecting to Content: Wisconsin Academic Standards

Within this vision for increased student success, rigorous, internationally benchmarked academic standards provide the content for high-quality curriculum and instruction and for a strategic assessment system aligned to those standards. With the adoption of the standards, Wisconsin has the tools to design curriculum, instruction, and assessments to maximize student learning. The standards articulate what we teach so that educators can focus on how instruction can best meet the needs of each student. When implemented within an equitable multi-level system of support, the standards can help to ensure that every child will graduate college and career ready.

References

The Guiding Principles for Teaching and Learning. 2011. Madison, WI: Wisconsin Department of Public Instruction. Retrieved from https://dpi.wi.gov/standards/guiding-principles.

Framework for Equitable Multi-Level Systems of Supports. 2017. Madison, WI: Wisconsin Department of Public Instruction. Retrieved from https://dpi.wi.gov/rti.

Section II

Wisconsin Standards for Information and Technology Literacy

What is Information and Technology Literacy Education?

Information and Technology Literacy is the ability of an individual, working independently or with others, to use tools, resources, processes, and systems responsibly to access and evaluate information in any medium, and to use that information to solve problems, communicate clearly, make informed decisions, and construct new knowledge, products, or systems. The standards outlined in this document provide an important foundation to prepare students to be college and career ready.

A Vision for Information and Technology Literacy

Today's society is witnessing an unprecedented explosion of information and use of digital resources. In an environment where information is doubling at an incredible rate and digital resources are becoming an increased component of the classroom and the workplace, students face both difficult challenges and increased opportunities. The successful students, workers, and citizens of tomorrow will be self-directed agents of their own learning.

The state superintendent's Wisconsin Digital Learning Plan (2016) identified updating the current Information and Technology Literacy Standards as a priority for DPI in collaboration with our local school districts and professional partners. The plan's vision for student learning called for equitable, personalized, applied, and engaged digital learning for all students. The skillful and equitable use of technology can transform the way teaching and learning happen in classrooms across Wisconsin. Digital tools can enhance student learning as they connect efforts to identify what students should know and be able to do as well as help students and educators assess progress toward achieving academic goals. To meet the needs of today's students and to ensure they are college and career ready, schools are encouraged to be innovative in providing student learning experiences, adopting technologies and instruction in ways that meaningfully engage the digital generation.

Wisconsin's Academic Standards for Information and Technology Literacy identifies and defines the knowledge and skills essential for all Wisconsin students to access, evaluate, and use information and technology to engage in and take ownership of their learning. These standards connect and interrelate current perspectives in information literacy, media literacy, and technology literacy into a unified conceptual framework. The standards also demonstrate processes for rethinking education, adapting to a constantly changing technological landscape and preparing students to enter an increasingly global economy.

As educators, we are preparing students for a future that we cannot yet imagine. Empowering students to become lifelong learners and providing them with the skills to face future challenges resourcefully and creatively is critical. Empowering students is not about using digital tools to support outdated education strategies and models. It is about tapping into technology's potential to amplify human capacity for collaboration, creativity, and communication. The Information and Technology Literacy

Standards are about leveling the playing field and providing young people worldwide with equitable access to powerful learning opportunities.

Information and Technology Literacy (ITL) Education in Wisconsin

The purpose of these standards is to identify information and technology content and performance standards for all students throughout the kindergarten to grade twelve (K-12) curriculum. We must ensure that all children have equal access to high-quality education programs. Clear statements about what students must know and be able to do are essential in making sure our schools offer opportunities to get the knowledge and skills necessary for success beyond the classroom. The standards are designed to be integrated into the various content and skill areas of the school curriculum. **The focus is on learning *with* information and technology rather than learning *about* information and technology.** This integration will be varied and diverse based on the curricula of individual schools and school systems. The reflective dialogue will occur in school districts among administrators, curriculum directors, library media specialists, technology coordinators, educators, instructional coaches, parents, students, and community members as each district adopts or modifies these standards and integrates them into the local instructional program for students.

These standards articulate end-of-grade level expectations. Some students - including students who receive special education services through an Individualized Education Program (IEP), students with gifts and talents, and English language learners - may benefit from additional supports or challenges. Some barriers to learning and engagement can be minimized through Universal Design for Learning (UDL). In addition, learning can be personalized through collaboration between educators, school staff, families, and students.

The focus is on a sequential and broad set of information and technology content and performance standards necessary for full development of skills for "learning how to learn" addressed in the core areas of the K-12 curriculum. Some of these ITL standards are included in other academic standards areas, and this inclusion underscores the importance of information and technology literacy standards by providing entry points for integrating them into a variety of curricular areas. Also, elective programs or advanced courses not a part of the curriculum required for all students may require additional or very specific technology skills beyond those listed in these standards.

Finally, accomplishing many of the performance standards listed here will require access to technology by individual students or student workgroups. These standards will be achieved with a strong district commitment to a technological infrastructure including sufficient equipment and access; materials and staffing; appropriate technical support; and a comprehensive, ongoing program of teacher training and staff development.

Wisconsin's Approach to Academic Standards for Information and Technology Literacy

With the release of the Wisconsin Standards for Information and Technology Literacy, educators have access to the foundational knowledge and skills needed to prepare students to be college and career ready. The learning priorities and performance indicators contained within each set of ITL standards consist of knowledge and skills specific to each of the seven strands. This working definition of information and technology literacy draws upon these seven cross-cutting concepts from the International Society for Technology in Education (ISTE) student learning framework, which the working group adapted in addition to Wisconsin-specific learning priorities and performance indicators:

- Empowered Learner (EL)
- Digital Citizen (DC)
- Knowledge Constructor (KC)
- Innovative Designer (ID)
- Computational Thinker (CT)
- Creative Communicator (CC)
- Global Collaborator (GC)

These standards are, of course, critical as the identified skills intersect with all content areas. In addition, there are many knowledge areas, skills, and dispositions common to the pursuit of careers and postsecondary education in many fields. The vision for the new Wisconsin Information and Technology Literacy standards outlines the importance of integrating these standards across all content areas. Students are expected to demonstrate a higher level of application of inquiry, critical thinking, integration of technology tools, and appropriate actions when using technology. The ITL standards support a higher level of student agency when leveraging critical thinking skills, collaboration, creativity, and communication. These standards connect and interrelate current perspectives in information literacy, media literacy, and technology literacy into a unified conceptual framework to integrate into other content areas.

Numerous existing sets of standards and standards-related documents have been used in developing the Wisconsin Standards for Information and Technology Literacy. These include:

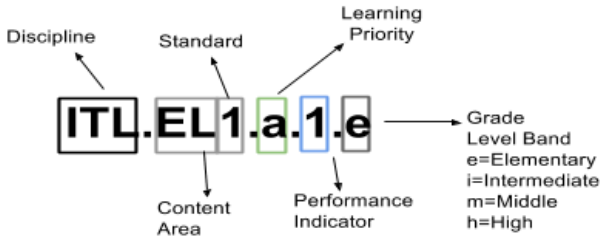
- International Society for Technology in Education (ISTE): Student Standards (c.2016)
- Common Sense Media: Digital Citizenship Curriculum
- Positive Behavioral Interventions and Support (PBIS)
- Wisconsin Department of Public Instruction (DPI): Information and Technology Literacy Standards (c.1998)
- AASL: American Association of School Librarians (AASL) Standards for the 2st Century Learner (c.2007)
- AASL: American Association of School Librarians (AASL) National School Library Standards (c.2017)
- Wisconsin Academic Standards for Business and Information Technology
- Wisconsin Academic Standards for Computer Science Academic
- Wisconsin Academic Standards for English Language Arts
- Wisconsin Academic Standards for Mathematics Academic
- Wisconsin Academic Standards for Literacy in All Subjects
- Wisconsin Digital Learning Plan (c2016)
- Future Ready Schools Framework
- Wisconsin Social and Emotional Learning Competencies

As with all the standards, the Wisconsin Standards for Information and Technology Literacy may be taught and integrated into a variety of classes and experiences. Each district, school, and program area should determine the means by which students meet these standards. Through the collaboration of multiple stakeholders, these foundational standards will set the stage for high-quality, successful, contemporary information and technology programming throughout Wisconsin's K-12 systems.

Standards Structure

The Wisconsin Standards for Information and Technology Literacy follow a specific structure.

Standards Coding



Content Area: Empowered Learner (EL)

Standard EL1: Students leverage digital tools and strategies to take an active role in choosing and achieving their learning goals.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
EL1.a: Set goals and reflect.	EL1.a.1.e: Identify the purpose of and set personal learning goals with educator guidance.	EL1.a.3.i: Create personal learning goals and select digital tools to achieve them.	EL1.a.5.m: Create personal learning goals and select and manage appropriate digital tools to achieve those goals.	EL1.a.7.h: Create and articulate personal learning goals and develop strategies leveraging the most effective digital tools to achieve those goals.
	EL1.a.2.e: Utilize appropriate digital tools to reflect on the learning process with educator guidance.	EL1.a.4.i: Utilize digital tools to reflect on and revise the learning process and make necessary revisions as needed to achieve goals with educator support.	EL1.a.6.m: Utilize digital tools to reflect on and revise the learning process and make necessary revisions as needed to achieve goals.	EL1.a.8.h: Utilize digital tools to reflect on the learning process, including successes, areas of improvement, and then make necessary revisions and adjust goals for future learning.

Standards Formatting

- **Standard**: Broad statement that tells what students are expected to know or be able to do
- **Learning priority**: Breaks down the broad statement into manageable learning pieces
- **Performance indicator by grade band**: Measurable degree to which a standard has been developed or met

Grade Bands

Grade bands of K-2, 3-5, 6-8, and 9-12 align to typical elementary, middle, and high school levels

- Grade bands K-2 and 3-5 performance indicators represent knowledge and skills that should be integrated throughout the elementary curriculum. These are represented in the standards coding with “e” and “i” respectively as there is no recommended grade level associated with each performance indicator.
- Performance indicators for the middle school and high school grade bands are also not associated with suggested grade levels, so the grade level codes for these grade bands are “m” for middle school and “h” for high school. Some districts may choose an integrated course format while others may choose to organize classes by discipline. There is not a recommended method.

- Information and Technology Literacy should be a core addition in all curricular areas at the middle level to enhance content and learning. Awareness, exploration, and building foundational skills should occur at the middle level.
- Information and Technology Literacy, at the high school level, must go beyond the basic foundational skills and knowledge. Students should be building skills and knowledge that are transferable across all content areas as well as extend to the workplace environment to ensure students are college and career ready.

With local control, districts can define performance indicators to grade levels that fit their needs. It should be noted that there are no performance indicators listed for 4K ITL standards. Our committee suggests that educators use the Wisconsin Model Early Learning Standards to guide their work and make connections with the natural information, media, and digital literacy experiences that come up every day in the effective 4K learning experience.

Section III

Discipline: Information and Technology Literacy (ITL) Standards

Content Area: Empowered Learner (EL)

Standard EL1: Students leverage digital tools and strategies to take an active role in choosing and achieving their learning goals.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
EL1.a: Set goals and reflect.	EL1.a.1.e: Identify the purpose of and set personal learning goals with educator guidance.	EL1.a.3.i: Create personal learning goals and select digital tools to achieve them.	EL1.a.5.m: Create personal learning goals and select and manage appropriate digital tools to achieve those goals.	EL1.a.7.h: Create and articulate personal learning goals and develop strategies leveraging the most effective digital tools to achieve those goals.
	EL1.a.2.e: Utilize appropriate digital tools to reflect on the learning process with educator guidance.	EL1.a.4.i: Utilize digital tools to reflect on and revise the learning process and make necessary revisions as needed to achieve goals with educator support.	EL1.a.6.m: Utilize digital tools to reflect on and revise the learning process and make necessary revisions as needed to achieve goals.	EL1.a.8.h: Utilize digital tools to reflect on the learning process, including successes, areas of improvement, and then make necessary revisions and adjust goals for future learning.

NOTE: This standard continued on next page.

Content Area: Empowered Learner (EL)

Standard EL1: Students leverage digital tools and strategies to take an active role in choosing and achieving their learning goals. (cont'd)

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
EL1.b: Build network to support learning.	EL1.b.1.e: Explore and identify digital tools to be used to connect with others to enhance their learning with educator guidance.	EL1.b.2.i: Select digital tools to help build a network of experts and peers to enrich the learning experience with educator support.	EL1.b.3.m: Identify and pursue online networks of experts and peers to support learning processes and outcomes.	EL1.b.4.h: Build a professional online presence to connect with experts and peers to enhance learning processes and outcomes and prepare for future endeavors.
EL1.c: Create personalized learning environment.	EL1.c.1.e: Identify and explore digital tools that can be used to support personalized learning environment with educator guidance.	EL1.c.2.i: Explore and select digital tools to customize personalized learning environments with educator support.	EL1.c.3.m: Manage digital tools to customize learning by making adjustments to their personalized learning environments to maximize the learning process.	EL1.c.4.h: Prioritize digital tools to customize personalized learning environments in ways that maximize the learning process.
EL1.d: Seek and utilize feedback.	EL1.d.1.e: Receive performance feedback and make adjustments based on that feedback with educator guidance.	EL1.d.2.i: Seek performance feedback and features embedded in digital tools to collect data and make learning adjustments with educator support.	EL1.d.3.m: Collect performance feedback and further data from features embedded in digital tools to analyze data and make learning adjustments.	EL1.d.4.h: Evaluate and utilize digital tools to seek feedback from digital and nondigital, then analyze data to make adjustments and justify outcomes.

Content Area: Empowered Learner (EL)

Standard EL2: Students understand the fundamental concepts of technology operations and demonstrate the ability to choose, use, and troubleshoot current technologies.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
EL2.a: Understand and apply functions and operations.	EL2.a.1.e: Explore a variety of digital tools and select a tool that will support learning with educator guidance.	EL2.a.2.i: Explore and select appropriate digital tools based on the necessary concepts of technology operations, including troubleshooting with educator support.	EL2.a.3.m: Navigate a variety of digital tools to choose, use, and troubleshoot technologies to create new knowledge.	EL2.a.4.h: Assess the fundamental concepts of digital tool operations; demonstrate the ability to choose, use, and troubleshoot current digital tools.

Content Area: Empowered Learner (EL)

Standard EL3: Students are able to transfer knowledge to explore emerging technologies.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
EL3.a: Transfer knowledge to emerging technology.	EL3.a.1.e: Recognize the patterns in the fundamental operations across a variety of digital tools.	EL3.a.2.i: Transfer learning between digital tools and learning environments.	EL3.a.3.m: Transfer and apply skills to begin troubleshooting and exploring emerging technologies.	EL3.a.4.h: Investigate the creation of new technologies.

Content Area: Digital Citizen (DC)

Standard DC1: Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
DC1.a: Cultivate and manage digital identity and reputation.	DC1.a.1.e: Recognize how information put online creates a digital footprint and can leave a "trail" online (digital footprint).	DC1.a.4.i: Identify information that should not be shared online because it is private and personal.	DC1.a.7.m: Demonstrate safe digital actions and understand information shared digitally is public and can be searched, copied, and potentially seen by public audiences.	DC1.a.10.h: Manage digital identity and practice positive online responsibilities to avoid inappropriate forms of self-disclosure.
	DC1.a.2.e: Relate positive behavior offline to positive behavior online.	DC1.a.5.i: Identify the traits of a positive and negative online identity.	DC1.a.8.m: Analyze personal online information to distinguish whether it is helpful or harmful to reputation and image, explain why, and reflect on the risks and benefits of presenting their identities in different ways online.	DC1.a.11.h: Choose information to post online that positively affects personal image and future college and career opportunities.
	DC1.a.3.e: Recognize that online information may not be factual.	DC1.a.6.i: Recognize that photos can be altered digitally and identify the pros and cons of alteration.	DC1.a.9.m: Compare and contrast attitudes toward diverse groups regarding editing, posting, and commenting on personal photos posted on social network sites.	DC1.a.12.h: Analyze broader norms and media messages that may frame the way people use, interpret, and respond to photos on social network sites and discuss the influence on society.

Content Area: Digital Citizen (DC)

Standard DC1: Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
DC1.b: Manage personal data to maintain digital privacy and security.	DC1.b.1.e: Understand the functions of usernames and passwords.	DC1.b.4.i: Utilize strong and secure passwords to protect private account information.	DC1.b.7.m: Develop strategies to manage secure passwords.	DC1.b.10.h: Utilize secure password protection practices and management.
	DC1.b.2.e: Recognize how personal information creates your identity.	DC1.b.5.i: Demonstrate an understanding of what personal data is, how to keep it private, and how it might be shared online.	DC1.b.8.m: Create and manage strategies to protect personal data and identify and follow online application terms and conditions (such as federal law and common practice relative to terms of service regarding the age 13 requirements) and possible legal consequences.	DC1.b.11.h: Identify situations where data-collection technology is used to track navigation online and decide when it is or is not appropriate.
	DC1.b.3.e: Seek a trusted adult if a website asks for any personal information and begin to identify inappropriate content.	DC1.b.6.i: Identify types of information and terms that can put a person at risk for identity theft and other scams, and safely manage unwanted messages.	DC1.b.9.m: Recognize strategies that intend harm or to access private information and define the different types of malicious threats, including viruses, phishing, and identity theft.	DC1.b.12.h: Develop strategies to guard against malicious threats including viruses, phishing, and identity theft, and recognize the importance of security protocols.

Content Area: Digital Citizen (DC)

Standard DC2: Students will demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
DC2.a: Use information, media, and digital resources in a responsible manner.	DC2.a.1.e: Identify guidelines for acceptable use of internet and other resources.	DC2.a.2.i: Recognize differences among content consumption, creation, and remixing.	DC2.a.3.m: Demonstrate responsible use of internet, social media, and other materials, and understand consequences of violating school policy and state or federal law.	DC2.a.4.h: Assess the need for different information policies and user agreements in a variety of settings (i.e. workplace, school, government).
DC2.b: Respect intellectual property rights.	DC2.b.1.e: Recognize intellectual property must be cited.	DC2.b.2.i: Explain and apply the concept of intellectual property rights and how copyrights protect authors and producers.	DC2.b.3.m: Explain the concept of "fair use" as it pertains to copyright law and be able to create citations for print, graphic, audio, and digital media resources.	DC2.b.4.h: Describe how to correspond with authors, publishers, or producers to obtain permission to use copyrighted materials while understanding legal consequences of plagiarism.
DC2.c: Recognize the rights and responsibilities of intellectual freedom in a democratic society.	DC2.c.1.e: Demonstrate respectful discourse and an understanding of the importance of hearing perspectives different from one's own, with educator guidance.	DC2.c.4.i: Define and explain the concept of intellectual freedom and identify examples of censorship.	DC2.c.7.m: Identify examples and explain the implications of censorship in the United States and in other countries and recognize that free-flow of information helps make informed citizenry decisions for the common good.	DC2.c.10.h: Understand the importance of equitable access to information and recommend strategies for ensuring others have equitable access to information, media, resources, and technology.

Content Area: Digital Citizen (DC)

Standard DC2: Students will demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
DC2.c: (cont'd) Recognize the rights and responsibilities of intellectual freedom in a democratic society.	DC2.c.2.e: Explore what information is appropriate to put online with educator guidance.	DC2.c.5.i: Participate responsibly and respectfully in a digital community.	DC2.c.8.m: Identify and describe positive aspects of online communication and the importance of acting responsibly when carrying out relationships over digital media.	DC2.c.11.h: Demonstrate positive and responsible communications in digital communities.
	DC2.c.3.e: Demonstrate respect in social situations.	DC2.c.6.i: Identify and create positive and constructive feedback.	DC2.c.9.m: Discuss the impact that negative comments can have on both their targets and their viewers.	DC2.c.12.h: Recognize free speech, along with constitutional exceptions on free speech, and its impact on individuals, groups, and communities, both online and offline.

Content Area: Knowledge Constructor (KC)

Standard KC1: Students critically curate a variety of digital tools and diverse resources.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
KC1.a: Plan and employ effective research strategies.	KC1.a.1.e: Utilize knowledge of the alphabet to search and use databases; use basic keyword search techniques to locate information.	KC1.a.4.i: Explore and use different keyword searches such as using multiple words, synonyms, and alternative words and phrases; and refine searches by drawing inferences to explain search results.	KC1.a.7.m: Demonstrate and practice a variety of search strategies for effective and efficient online searches.	KC1.a.10.h: Apply safe and effective search strategies across a range of diverse resources.
	KC1.a.2.e: Utilize digital tools and resources contained within a classroom platform, or otherwise provided by the educator, to find information on topics of interest.	KC1.a.5.i: Collaborate with an educator to employ appropriate research techniques to locate and access print and digital resources that help in the learning process.	KC1.a.8.m: Demonstrate and practice the ability to effectively utilize research strategies to locate and access appropriate print and digital resources in support of learning.	KC1.a.11.h: Plan and employ effective research strategies to locate and access information and other resources for intellectual or creative pursuits.
	KC1.a.3.e: Follow an inquiry-based process by forming simple questions and begin exploring ways to answer them using print and digital resources.	KC1.a.6.i: Follow an inquiry-based process by generating questions and exploring different ways to locate and evaluate sources that provide needed information.	KC1.a.9.m: Demonstrate and practice using an inquiry-based process that involves asking questions, investigating the answers, and developing new understandings for personal or academic learning activities.	KC1.a.12.h: Utilize an inquiry-based process to deepen content knowledge, connect academic learning with the real world, pursue personal interests, and investigate opportunities for personal growth.

Content Area: Knowledge Constructor (KC)

Standard KC1: Students critically curate a variety of digital tools and diverse resources.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
KC1.b: Evaluate the accuracy, perspective, credibility, and relevance of information, media, data or other resources.	KC1.b.1.e: Explore various websites identifying different information and graphics with educator guidance.	KC1.b.3.i: Evaluate digital resources to determine credibility and accuracy with educator support.	KC1.b.5.m: Practice and demonstrate the ability to evaluate resources for accuracy, perspective, credibility, and relevance while distinguishing between fact and opinion in the research.	KC1.b.7.h: Assess the quality of evidence and data found in selected sources on basis of accuracy, validity, appropriateness for needs, importance, and social and cultural context. Evaluate information and graphics for prejudice, false data, misrepresentation, and misleading data.
	KC1.b.2.e: Recognize websites can influence decision making.	KC1.b.4.i: Identify how websites can be used to appeal to different groups to evoke a response and action.	KC1.b.6.m: Recognize the importance of leveraging multiple viewpoints in decision making and implementation.	KC1.b.8.h: Select information that is related to a problem or question while using formats and genre most appropriate to the content. Establish criteria in judging the information in this process.
KC1.c: Curate information from digital resources.	KC1.c.1.e: Explore a variety of educator-selected, curated content tools to acquire and organize information.	KC1.c.2.i: Organize information from a variety of educator-selected, curated content and make meaningful, thematic connections between resources.	KC1.c.3.m: Locate and collect resources from a variety of sources and organize assets into curated collections for a wide range of audiences, projects, and purposes.	KC1.a.4.h: Locate, collect, and evaluate resources and curated collections from a variety of sources and organize content into themes in ways that are coherent and shareable to multiple audiences.

Content Area: Knowledge Constructor (KC)

Standard KC2: Students produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
KC2.a: Produce creative artifacts.	KC2.a.1.e: Explore a variety of educator-selected resources, and with assistance, create an artifact that demonstrates connections to their learning.	KC2.a.2.i: Explore, select, and utilize sources of curated information to produce creative artifacts to make meaningful learning experiences.	KC2.a.3.m: Explore, select, and utilize multiple sources of curated information to produce creative artifacts for multiple audiences demonstrating meaningful connections or conclusions.	KC2.a.4.h: Explore, select, and utilize multiple sources of curated information to produce creative artifacts for multiple audiences, demonstrating meaningful connections or conclusions and consider the value of crowdsourcing, and how it works both online and offline.
KC2.b: Build knowledge by actively exploring real-world issues and problems.	KC2.b.1.e: Build knowledge to connect ideas to your own interests, previous knowledge, and experience.	KC2.b.3.i: Utilize prior and background knowledge as context for inquiry.	KC2.b.5.m: Demonstrate initiative and engagement by posing questions and investigating the answers beyond the collection of superficial facts.	KC2.b.7.h: Use knowledge, information skills, and digital resources and tools to engage in public conversation and debate around issues of common concern.
	KC2.b.2.e: Explore real-world issues and problems and share their ideas about them with others with educator guidance.	KC2.b.4.i: Connect learning to age-appropriate real-world issues and problems and begin to develop questions for problem solving.	KC2.b.6.m: Explore real-world issues and problems and actively pursue an understanding of them. Begin to develop answers and solutions for problem solving.	KC2.b.8.h: Build knowledge by actively exploring real-world issues and problems, independently developing ideas and theories and pursuing answers and solutions.

Content Area: Innovative Designer (ID)

Standard ID1: Students use a variety of digital tools and resources to identify and solve authentic problems using design thinking.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
ID1.a: Find authentic problems in local and global contexts.	ID1.a.1.e: Identify and describe a problem or challenge within the classroom or home environment. Explain why it is a problem.	ID1.a.2.i: Identify and describe problems or challenges that affect the community. Analyze all conditions that make it a problem.	ID1.a.3.m: Collaborate with others outside of the classroom to identify and describe problems and challenges on a global perspective.	ID1.a.4.h: Collaboratively analyze the community locally and globally to make change socially. Explain the depth and breadth of a problem and analyze conditions for improvement.
ID1.b: Exhibit tolerance for ambiguity, perseverance, and the capacity to work with authentic, open-ended problems.	ID1.b.1.e: Demonstrate perseverance when working to complete a challenging task.	ID1.b.2.i: Demonstrate perseverance when working with authentic, open-ended problems.	ID1.b.3.m: Demonstrate an ability to persevere through authentic, open-ended problems by applying abstract concepts with greater ambiguity.	ID1.b.4.h: Apply abstract concepts to solve authentic, open-ended problems for a group of stakeholders.

Content Area: Innovative Designer (ID)

Standard ID2: Students use a variety of technologies within a design process to create new, useful, and imaginative solutions.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
ID2.a: Know and use a deliberate design process for generating ideas, testing theories, and creating innovative artifacts and solutions.	ID2.a.1.e: Ask questions to seek understanding of an issue or problem and suggest possible solutions.	ID2.a.2.i: Explore and practice how a deliberate design process works to generate ideas, considers solutions, plans to solve a problem, and creates innovative products to share with others.	ID2.a.3.m: Use a deliberate design process to generate ideas, create innovative products, and test theories as possible solutions.	ID2.a.4.h: Select and use a deliberate design process for generating ideas, testing theories, and creating innovative artifacts.
ID2.b: Select and use digital resources to plan and manage a design process that considers design constraints and calculated risks.	ID2.b.1.e: Use age-appropriate digital resources to employ guided practice of a formal design process.	ID2.b.2.i: Use age-appropriate digital resources to plan and manage the design process.	ID2.b.3.m: Select and use digital resources to support a formal design process and expand understanding to identify constraints and trade-offs while weighing risks as they apply to authentic problems.	ID2.b.4.h: Select and use digital resources to plan and manage a design process that considers design constraints and calculated risks as they apply to authentic problems.

Content Area: Innovative Designer (ID)

Standard ID2: Students use a variety of technologies within a design process to create new, useful, and imaginative solutions.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
ID2.c: Develop, test, and refine prototypes as part of a cyclical design process.	ID2.c.1.e: Use a guided design process to create, test, and redesign prototypes, if necessary.	ID2.c.2.i: Engage in an iterative process to develop and test prototypes and reflect on the role that trial and error plays in the design process.	ID2.c.3.m: Engage in an iterative process to develop and test prototypes; understand and appreciate that failures or setbacks are opportunities for growth and improvement.	ID2.c.4.h: Engage in an iterative process to develop and test prototypes. Apply this process to marketplaces, determine the metrics for success and progress monitoring, and understand that no product is final or perfect.

Content Area: Computational Thinker (CT)

Standard CT1: Students develop and employ strategies for understanding and solving problems.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
CT1.a: **Identify, define, and interpret problems where digital tools can assist in finding solutions.**	CT1.a.1.e: Identify a problem and use digital tools to explore and find solutions.	CT1.a.2.i: Identify problems and select appropriate digital tools to analyze and explore solutions.	CT1.a.3.m: Define and solve an authentic problem using data analysis, modeling, and algorithmic thinking.	CT1.a.4.h: Create and articulate a precise and thorough description of a problem designed to utilize digital tools, data analysis, abstract modeling, or algorithmic thinking to facilitate a solution.
CT1.b: **Collect data, then identify and use digital tools to analyze and represent the data to find solutions.**	CT1.b.1.e: Utilize age-appropriate digital tools to collect, organize, and represent data.	CT1.b.2.i: Utilize age-appropriate digital tools to collect data, design, code, test, and verify possible solutions. Collect and represent data to discuss results and share conclusions.	CT1.b.3.m: Select an effective digital tool to collect data, design, code, test, and verify possible solutions to reflect on the data to solve authentic problems.	CT1.b.4.h: Select an effective digital tool to collect data, design, code, test, and verify possible solutions to reflect on the data to solve authentic problems.
CT1.c: **Break problems into smaller parts, identify key information, and develop descriptive models.**	CT1.c.1.e Separate a simple problem into smaller parts, identify key information, and brainstorm ways to solve the problem.	CT1.c.2.i: Separate problems into smaller parts, identify patterns and key information, and brainstorm ways to solve problems.	CT1.c.3.m: Separate authentic problems into component parts, identify patterns and differences, and develop descriptive models to facilitate problem solving.	CT1.c.4.h: Evaluate the problem-solving process and algorithms of others, and synthesize this information to create the most effective and efficient way to solve an authentic problem.

Content Area: Creative Communicator (CC)

Standard CC1: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats, and digital media appropriate to their goals.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
CC1.a: Choose appropriate platforms and digital tools.	CC1.a.1.e: Use age-appropriate digital tools for producing new creations or published communications with educator guidance.	CC1.a.2.i: Evaluate and utilize the features and functions of a variety of digital tools for producing new creations or communications with educator support.	CC1.a.3.m: Evaluate and utilize the features and functions of a variety of digital tools and platforms to create, share, and communicate content effectively.	CC1.a.4.h: Evaluate and determine appropriate platforms and digital tools to create, communicate, and share content effectively with an authentic audience.
CC1.b: Create or remix digital resources.	CC1.b.1.e: Recognize the differences between original and remixed digital work. Use digital tools, with educator guidance, to create original and remixed work.	CC1.b.2.i: Differentiate between original and remixed digital work. Apply strategies to responsibly remix creative work.	CC1.b.3.m: Remix digital content responsibly into new, creative work.	CC1.b.4.h: Create works for an authentic audience that reflect responsible remixing of digital and Fair Use content.
CC1.c: Communicate effectively using a variety of digital tools.	CC1.c.1.e: Communicate ideas using a variety of digital tools with educator guidance.	CC1.c.2.i: Create digital artifacts to communicate ideas clearly.	CC1.c.3.m: Communicate complex ideas clearly using various digital tools to an authentic audience.	CC1.c.4.h: Utilize digital tools to analyze, modify, and communicate complex ideas, data, and solutions to an authentic audience.

Content Area: Creative Communicator (CC)

Standard CC2: Students publish and present content customized for their audience(s), purpose, and task.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
CC2.a: Publish and present content.	CC2.a.1.e: Identify audiences and appropriate communication strategies.	CC2.a.2.i: Recognize the impact of the audience, purpose, and task when publishing and presenting content.	CC2.a.3.m: Publish and present content that will effectively convey ideas to an authentic audience.	CC2.a.4.h: Intentionally align message with audience, purpose, and task when publishing and presenting content.

Content Area: Global Collaborator (GC)

Standard GC1: Students use digital tools to broaden their perspectives and enrich their learning with culturally responsive practices by collaborating and working effectively with local and global teams.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
GC1.a: Use digital tools to connect with learners from a variety of backgrounds and cultures.	GC1.a.1.e: Use digital tools and resources to understand similarities and differences of others in the classroom and beyond.	GC1.a.2.i: Use digital tools to create connections with an authentic audience from diverse backgrounds or cultures.	GC1.a.3.m: Use digital tools to interact with others to develop a richer understanding of diverse perspectives and cultures.	GC1.a.4.h: 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.
GC1.b: Contribute constructively on project teams.	GC1.b.1.e: Learn a variety of roles within a team to cooperate.	GC1.b.2.i: Explore and participate in a variety of roles within a team using age-appropriate digital tools to complete a project or solve a problem.	GC1.b.3.m: Contribute and commit to team goals and determine role on the team based on knowledge of digital tools and content, as well as personal preference.	GC1.b.4.h: Contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.
GC1.c: Contribute to the exchange of ideas within and beyond the learning community.	GC1.c.1.e: Share interests and experiences with one result being an understanding of different perspectives, with educator guidance.	GC1.c.2.i: Use appropriate digital tools to gain an understanding of different perspectives and experiences from others, with educator support.	GC1.c.3.m: Select and leverage appropriate digital tools to share interests to gain an understanding of different perspectives and experiences from others.	GC1.c.4.h: Select and leverage appropriate digital tools to contribute to and collect information from the exchange of ideas within and beyond the learning community.

Content Area: Global Collaborator (GC)

Standard GC2: Students use digital tools to connect with a global network of learners and engage with issues that impact local and global communities.

Performance Indicators (by Grade Band)

Learning Priority	K-2 (e)	3-5 (i)	6-8 (m)	9-12 (h)
GC2.a: Use collaborative digital resources to examine issues and problems from diverse local and global perspectives.	GC2.a.1.e: Use pre-selected digital tools to communicate with others and to look at problems from diverse local and global perspectives.	GC2.a.2.i: Select and utilize collaborative digital tools to connect with others—including peers, experts, and community members—to explore diverse local and global perspectives.	GC2.a.3.m: Leverage collaborative digital tools to connect with others—including peers, experts, and community members—to learn about issues and problems or to gain diverse local and global perspectives.	GC2.a.4.h: Leverage collaborative digital tools to work with others—including peers, experts, and community members—to learn about issues and problems and to solicit diverse local and global perspectives to discuss solutions for social change.
GC2.b: Explore local and global issues and use collaborative digital resources to investigate and develop solutions.	GC2.b.1.e: Use pre-selected digital tools to work together to understand issues and recommend solutions.	GC2.b.2.i: Collaborate with others using digital tools to explore local and global issues and solutions.	GC2.b.3.m: Select and use collaborative digital tools to work with others to explore local and global issues and investigate solutions.	GC2.b.4.h: Explore and analyze local and global issues and leverage collaborative digital tools to work with others to investigate, develop, and actualize solutions.

Section IV

Disciplinary Literacy: Literacy for Learning in Information and Technology Literacy

What is Disciplinary Literacy?

In Wisconsin, disciplinary literacy is defined as the confluence of content knowledge, experiences, and skills merged with the ability to read, write, listen, speak, think critically, and perform in a way that is meaningful within the context of a given field.

The *Wisconsin Academic Standards for Literacy in All Subjects* are connected to each set of content-specific standards to guide educators as they strive to help students meet the literacy challenges within each particular field of study. This national effort is referred to as disciplinary literacy.

Disciplinary literacy is important in ALL courses and subjects at all grade levels. Therefore, the *Wisconsin Academic Standards for Literacy in All Subjects* provide standards for cross-discipline literacy in **all disciplines and every grade level K-12.** This literacy focus must begin as soon as children have access to formal education and continue intentionally as college and career readiness goals advance for all children in Wisconsin.

Elementary classroom teachers build the foundational literacy skills necessary for students to access all learning. Additionally, they develop content-specific literacy skills to read, write, listen, speak, and think critically in each discipline beginning at an early age. The applicable K-5 standards help educators in Wisconsin build a ladder of skills and dispositions that lead to accelerated achievement across disciplines.

Why is Disciplinary Literacy Important?

The modern global society, of which our students are a part, requires postsecondary learning. An analysis of workforce trends by Georgetown University economist Anthony Carnevale and his colleagues found that likely 65 percent of all job openings in 2020 will require some postsecondary education. Postsecondary success depends on students' ability to comprehend and produce the kinds of complex texts found in all disciplines. Therefore, the economic future of our state, as well as our students and their success as productive citizens and critical thinkers, links to disciplinary literacy.

The message is that literacy is integral to attainment of content knowledge and content is essential background knowledge for literacy development. This interdependent relationship exists in all disciplines.

Textbooks, articles, manuals, and historical primary source documents create specialized challenges for learners. These texts often include abstracts, figures, tables, diagrams, and specialized vocabulary. The ideas are complex and build across a number of paragraphs requiring focus and strategic processing. To comprehend and produce this type of text, students must be immersed in the language and thinking processes of that discipline and they must be supported by an expert guide, their teacher (Carnegie Report, 2010).

A focus at the elementary level on foundational reading, when expanded to include engaging experiences connected to informational texts, vocabulary, and writing for content-specific purposes, builds background knowledge and skills in each discipline. This increases opportunities for success as students approach more rigorous content in those disciplines (Alliance for Excellent Education, 2011).

Reading, writing, speaking, listening, and critical thinking must be integrated into each discipline across all grades so that all students gradually build knowledge and skills toward college and career readiness. Collaboration among institutes of higher education, CESA Statewide Network, districts, schools, teachers, and family and community will guide the implementation of the standards in Wisconsin.

The Wisconsin State Standards require educators to support literacy in each classroom across the state. Since the impact of this effort is significant, it is essential that resources and supports be accessible to all educators. To build consistent understanding, DPI convened a statewide Disciplinary Literacy Leadership Team in 2011 comprised of educators from many content areas and educational backgrounds. This team was charged with examining standards, identifying the needs in the field for support, and gathering materials and resources to address those needs.

Wisconsin Foundations for Disciplinary Literacy

To guide understanding and professional learning, a set of foundations, developed in concert with Wisconsin's *Guiding Principles for Teaching and Learning*, directs Wisconsin's approach to disciplinary literacy.

The literacy skills of reading, writing, listening, speaking, and critical thinking improve when content-rich learning experiences motivate and engage students.

Academic learning begins in early childhood and develops across all disciplines.

Each discipline has its own specific vocabulary, text types, and ways of communicating. Children begin learning these context- and content-specific differences early in life and continue through high school and beyond. While gardening, small children observe the form and function of a root, stem, leaf, and soil; or measure, mix, and blend while baking a cake. School offers all students opportunities to develop the ability to, for example, think like a scientist, write like a historian, critique like an artist, problem solve like an auto mechanic, or analyze technological advances like a health care technician. As literacy skills develop, educators gradually shift the responsibility for reading, writing, listening, speaking, and critical thinking to students through guided supports in both individual and collaborative learning experiences.

Content knowledge is strengthened when educators integrate discipline-specific literacy into teaching and learning.

Educators help students recognize and understand the nuances of a discipline by using strategies that "make their thinking visible." They promote classroom reading, writing, listening, speaking, and critical thinking using authentic materials that support the development of content-specific knowledge. They guide students through these complex texts by using strategies that develop conceptual understanding of language and set expectations for relevant application of skills. These literacy practices deepen students' content knowledge, strategies, and skills so that their learning transfers to real-world situations.

"The ability to comprehend written texts is not a static or fixed ability, but rather one that involves a dynamic relationship between the demands of texts and prior knowledge and goals of the reader."

Educators who foster disciplinary literacy develop experiences that integrate rigorous content with relevant collaborative and creative literacy processes to motivate and engage students. Setting high expectations, they structure routines and supports that empower students to take charge of their own learning. When students work in teams to research science and mathematics concepts in the development of an invention or a graphic arts design or when they collaboratively build a blog that contains their recent marketing venture, they use specific literacy skills and strategies to solidify learning. Students need these opportunities over time to develop the precise and complex reading, writing, listening, speaking, and critical thinking skills demanded in today's careers.

Students demonstrate their content knowledge through reading, writing, listening, and speaking as part of a content-literate community.

Students who are literate in a particular discipline are able to successfully read, write, and speak about that discipline and can listen to and think critically as others communicate in that community. Performance tasks that allow students to present the complexity of a content area in a way that is meaningful to the field become authentic approaches to assessing mastery within a discipline. Such tasks empower students to discover the real-world connections across disciplines and to actively participate in communities of discipline-literate peers.

What research and resources are available?

The *Wisconsin Academic Standards for Literacy in All Subjects* reflect the importance of literacy in both the oral and written language and in both productive (speaking and writing) and receptive (listening and reading) discourse. Clearly, critical and precise thinking are required to develop all of these specific strategies and skills. The standards also address the learning and functioning of language in a technological, media-driven world because the language that we use is selective depending upon the context of the conversation.

The following section offers relevant research and resources to support professional learning in reading, writing, speaking, listening, and language across disciplines. Collegial conversation and learning, both cross-discipline and within-discipline, will help make the Wisconsin Academic Standards more applicable to schools and districts and will address the needs of unique programs within those contexts. A collection of online resources will continue to develop as support materials emerge.

Reading Connections

While early reading focuses on learning that letters make sounds and that words carry meaning, reading quickly develops to a point where the message taken from text depends on what the reader brings to it. *The Carnegie Report*, *Reading in the Disciplines* (2010), describes this phenomenon:

> Therefore, a musician reading a journal article that describes concepts in music theory will take more information away from the text than a music novice because of their knowledge and experience in music. As well, an individual who spends a significant amount of time reading automotive manuals will more easily navigate a cell phone manual because of familiarity with that type of text.

A chart excerpted from the *Carnegie Report* (2010) details a few of the generic and more discipline-specific strategies that support students as they attempt to comprehend complex text. While the generic strategies pertain across content areas, discipline-specific ones must be tailored to match the demands of the content area.

Both generic and discipline-focused strategies and knowledge must be applied to the comprehension and evaluation of:

- textbooks
- journal and magazine articles
- historically situated primary documents
- full-length books
- newspaper articles
- book chapters
- multimedia and digital texts

Generic reading strategies*

- Monitoring comprehension
- Pre-reading
- Setting goals
- Thinking about what one already knows
- Asking questions
- Making predictions
- Testing predictions against the text
- Re-reading
- Summarizing

Discipline-specific reading strategies*

- Building prior knowledge
- Building specialized vocabulary
- Learning to deconstruct complex sentences
- Using knowledge of text structures and genres to predict main and subordinate ideas
- Mapping graphic (and mathematical) representations against explanations in the text
- Posing discipline-relevant questions
- Comparing claims and propositions across texts
- Using norms for reasoning within the discipline (i.e. what counts as evidence) to evaluate claims

*Source: *Carnegie Report*, (2010)

Additional resources support reading in specific subjects. *Content Counts! Developing Disciplinary Literacy Skills, K–6* by Jennifer L. Altieri (2011) is a guide for discipline-specific literacy at the elementary level and offers strategies to balance the demands of literacy while continuing to make content count and help students meet the reading, writing, speaking, and listening demands of the content areas as they advance in school.

A resource by Doug Buehl (2011), *Developing Readers in the Academic Disciplines*, describes what it means to read, write, and think through a disciplinary lens in the adolescent years. This teacher-friendly guide helps connect literacy with disciplinary understandings to bridge academic knowledge gaps, frontload instruction, and build critical thinking through questioning.

Writing Next: Effective Strategies to Improve Writing of Adolescents in Middle and High Schools (2007), detailed research on writing to learn, rather than only for assessment, as having a significant impact on content learning.

Note on range and content of student reading

The *Wisconsin Academic Standards for Literacy in All Subjects* require that "students must read widely and deeply from among a broad range of high-quality, increasingly challenging...text." This type of reading—included in an intentionally developed curriculum—supports students in building a base of content-specific knowledge while developing skills to read increasingly complex text.

Wisconsin uses a three-part model for text complexity, considering qualitative, quantitative, and reader-and-task demands (see https://dpi.wi.gov/reading/professional-learning/text-complexity for more information). In addition, a well-developed collection of complex texts carefully considers representation and diversity, including diversity in the creators and topics of texts.

Writing Connections

The *Wisconsin Academic Standards for Literacy in All Subjects* call for emphasis on three types of writing: narrative, informational, and argument. Writing that presents a logical argument is especially appropriate to discipline-specific work since credible evidence differs across content areas. The ability to consider multiple perspectives, assess the validity of claims, and present a point of view is required in argumentative writing. These thinking and communication skills are "critical to college and career readiness."

The study found writing to learn was equally effective for all content areas in the study (social studies, math, and science) and at every grade (4-12).

Note on range and content of student writing

The *Wisconsin Academic Standards for Literacy in All Subjects* require that students "write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences." This breadth and depth of writing ensures students are able to flexibly select a format to meet the needs of a specific audience and purpose. This is accomplished through significant amounts of time dedicated to varied writing.

Students must have extensive vocabularies, built through reading and explicit instruction embedded in the context of content learning. This enables them to comprehend complex texts, engage in purposeful writing and communicate effectively within a discipline.

Speaking, Listening, and Language Connections

The ability to share ideas and orally communicate with credibility in a specific academic discourse empowers students and allows access to specialized groups. In *Situated Language and Learning: A Critique of Traditional Schooling*, James Paul Gee (2004) describes the need to prioritize these skills so that students are at ease as they enter situations connected to a specific content area and are more likely to continue their learning in that discipline.

As expertise develops, students feel more and more comfortable applying knowledge and skills while speaking and listening in a specific discipline.

- A media course may teach students appropriate expression, tone, and rate of speech when addressing a large audience.
- Listening carefully to questions posed is a specialized skill that debate facilitators develop.
- Scientists learn to listen for bias in the perspectives presented by peers to determine the reliability of scientific outcomes.
- Artists have very specialized and specific ways of speaking about the many aspects of a piece.

A policy brief from the Alliance for Excellent Education, *Engineering Solutions to the National Crisis in Literacy* describes "a staircase of literacy demands" and emphasizes the importance of a progressive development of language and literacy over time.

The conceptual understanding of "functions" in mathematics may begin to develop in elementary school in its simplest form. As the concept develops over the years, students will use the word "function" in a meaningful way when speaking and writing to describe the mathematical concept they apply. When educators explicitly connect a mathematical term to its application and repeatedly expose students to the concept connected to the term, a specialized language becomes second nature to the mathematics classroom.

Skills in determining or clarifying the meaning of words and phrases encountered, choosing flexibly from an array of strategies, and seeing an individual word as part of a network of other words that, for example, have similar denotations but different connotations, allow students to access information and support their own learning.

Literacy in Multiple Languages

Increasing economic, security, cross-cultural, and global demands underscore the value of literacy in more than one language. Students who think, read, write, and communicate in multiple languages are an asset to our own country and can more easily interact and compete in the world at large.

English learners in our classrooms face significant challenges as they add a new language and work to grasp content at the same rate as their English-speaking peers. In a report to the Carnegie Corporation, *Double the Work: Challenges and Solutions to Acquiring Academic Literacy for Adolescent English Language Learners (2007)*, researchers found that a focus on academic literacy is crucial for English language learners' success in school. In their description of academic literacy, they include reading, writing, and oral discourse that:

- varies from subject to subject;
- requires knowledge of multiple genres of text, purposes for text use, and text media;
- is influenced by students' literacies in context outside of school; and
- is influenced by students' personal, social, and cultural experiences.

The needs of our English learners are addressed when we embed disciplinary literacy strategies into our subject area teaching. These high impact strategies and skills allow English language learners and all students to more readily access content knowledge and connect it to the prior knowledge they bring to the classroom. When educators take the initiative to understand and embed these strategies and skills, they offer additional opportunities for success to all of our students.

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