Denali Borough School District
P.O. Box 280 • Healy, Alaska 99743 • (907) 683-2278 • FAX (907) 683-2514

Thursday, May 28, 2026
WORK SESSION & REGULAR SCHOOL BOARD WORK SESSION AT 6PM; REGULAR SB MEETING AT 7PM
Tri-Valley School

I. Work Session
   A. Artificial Intelligence - A conceptual framework for consideration in a school environment.
II. Regular Session - Opening Items

   A. Call to Order
   B. Pledge of Allegiance
   C. Roll Call
III. Adoption of Agenda and Approval of Consent Agenda
   A. Adoption of Agenda
   B. Consent Agenda
IV. Greeting and Reading
   A. Board Greeting and Reading
V. Public Comments on Agenda Items

During this section of the agenda, the Board of Directors listens to oral communications from audience members on agenda items. When speaking during this section of the agenda, please state your name, the agenda item on which you are commenting and limit your testimony to approximately three (3) minutes per person.

For our virtual meetings we set up a system for members of the public to request to comment. The link to submit a request can be found on the DBSD website in the Board of Education section. When we receive a request we send a specific zoom invitation to that person and hold them in the zoom waiting room until the appropriate comment period.

Comments can also be provided in writing to schoolboard@dbsd.org. To be included in the board packet for a meeting the written comment must be received before 4pm, two days before the meeting. Written comments received after that time will be included in the packet for the next board meeting.

When providing a comment to the School Board, please remember that it is a time for you and other residents to share your comments or thoughts on an issue directly with the Board. It is not a time for a dialogue with the Board or individual members of the Board.

   A. Public Comments on Agenda Items
VI. Presentations
   A. Tri-Valley Student Presentation
VII. Comments from Denali Borough Mayor
   A. Mayor's Report
VIII. Administration Reports
   A. School Reports
   B. Director of Learning & Instruction Report
   C. Federal and State Programs Report
   D. Maintenance Report
IX. Reports and Correspondence
   A. Committee Reports
   B. Business Manager Report

Pursuant to the Open Meetings Act the Board reserves the right, upon passage of a motion in open session, to discuss any matter in executive session which meets one or more of the following criteria: (1) matters, the immediate knowledge of which would clearly have an adverse effect upon the finances of the public entity; (2) subjects that tend to prejudice the reputation and character of any person, provided the person may request a public discussion; (3) matters which by law, municipal charter, or ordinance are required to be confidential; (4) matters involving consideration of government records that by law are not subject to public disclosure. The motion shall identify the subject to be discussed without undermining the confidentiality of the executive session.

Mission Statement

Nurturing, empowering and inspiring today's student to positively shape tomorrow's world.

C. Tri-Valley School Report
D. Superintendent Report

X. Old Business
A. None

XI. New Business
A. Board Policies - First Reading
BP 4119.11 - Sexual Harassment
BP 4119.12 - Harassment
BP 4119.21 - Code of Ethics
BP 4119.22 - Dress and Grooming
BP 4119.23 - Unauthorized Release of Confidential Information
BP 4119.25 - Political Activities of Employees
BP 4119.3 - Duties of Personnel
BP 4119.41 - Employees with Infectious Disease
BP 4119.42 - Exposure Control Plan for Bloodborne Pathogens
BP 4119.43 - Universal Precautions
BP 4122 - Student Teachers
BP 4123 - Teacher Aides/Paraprofessionals
BP 4131 - Staff Development
BP 4132 - Publication or Creation of Materials
BP 4133 - Travel Expenses
BP 4135 - Soliciting and Selling
BP 4136 - Non-School Employment
BP 4137 - Coaches
BP 4141 - Negotiations and Negotiated Agreement
BP 4141.6 - Concerted Activity/Work Stoppage
BP 4143 - Negotiated Agreement
BP 4144 - Complaints
BP 4151 - Salary Guides
BP 4152 - Employee Pay
BP 4153 - Overtime Pay/Compensatory Time Off
BP 4154 - Health and Welfare Benefits
BP 4154.1 - Classified Benefits
BP 4157 - Employee Safety
BP 4158 - Employee Security
BP 4159 - Employee Assistance Programs
BP 4161 - Leaves
BP 4161.1 - Classified and Hourly Exempt Sick Leave
BP 4161.2 - Classified and Hourly Exempt Personal Leave
BP 4161.3 - Emergency Leave
BP 4161.4 - Family and Medical Leave
BP 4161.6 - Administrative Leave
BP 4161.7 - Civic Leave
BP 4162 - Holidays, Vacation, and Annual Leave
BP 4163 - Classified and Hourly Exempt Vacation Days
BP 4170 - Summer Work Hours

B. DBSD/DESPA Tentative Agreement
C. Curriculum Adoption
D. DBSD Course Guide
E. Resolution 26-01 - Staff Recognition
F. Legislative Citation - Staff Recognition
Legislative Citation for Dan Polta
G. Classified & Exempt Rehire Notice
H. Certified Teacher Contracts
I. DBSD Summer Check Signers
J. Executive Session - Personnel
K. Regular Session

L. Superintendent Transition and Consulting Support

XII. Public Comments on Non-Agenda Items

XIII. Comments from Board and Superintendent

XIV. Adjourn

Empowering Learners for the Age of AI

An AI Literacy Framework for Primary and Secondary Education

European Commission

OECD

With Support From

code.org

REVIEW DRAFT (May 2025)

Welcome!

Empowering Learners for the Age of AI: An AI Literacy Framework for Primary and Secondary Education (AILit Framework) is a joint initiative of the European Commission and the Organization for Economic Cooperation and Development (OECD). Code.org and leading international experts support its development. The AILit Framework contributes to the PISA 2029 Media & Artificial Intelligence Literacy assessment.

This draft framework also aligns with the broader European Commission efforts to promote quality education and skills provision for the digital transformation in the context of the Digital Education Action Plan 2021-2027. In particular, the framework responds to the 2023 Council Recommendations on digital education and skills. It complements the 2022 Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators and DigComp 2.2: The Digital Competence Framework for Citizens. More broadly, the EU AI Act, the first comprehensive legislation on AI in the world, promotes a human-centered and risk-based approach to the adoption of AI systems. In particular, Article 4 of the Act requires both providers and deployers of AI systems to ensure that their staff, and anyone using the systems on their behalf, have an adequate level of AI literacy.

This draft is intended to elicit feedback from educators and stakeholders. We hope it sparks a dialogue about what AI literacy means and how teaching and learning must evolve in an age of AI. We also look forward to engaging with stakeholders over the next several months and invite you to provide feedback at in-person and virtual events hosted by the European Commission, OECD, Code.org, and our network of international experts and organizations. Your input plays a crucial role in shaping the future of AI literacy.

European Commission

OECD

With Support from

code.org

Co-funded by the European Union

This document was produced with the financial assistance of the European Union. The views expressed herein can in no way be taken to reflect the official opinion of the European Union.

Expert Group

An international team of experts informed the development of this draft. Their insight ensures that the framework aligns with research and practice at the intersections of education, technology, and learning design.

Cathy Adams, Professor of Educational Computing, Faculty of Education, University of Alberta, Edmonton, Canada

Romina Cachia, Scientific Team Leader, Joint Research Centre of the European Commission, Seville, Spain

Kari Kivinen, Education Outreach Expert, European Intellectual Property Observatory, Alicante, Spain

Victor Koleszar, Pedagogical Coordinator for Computational Thinking and Artificial Intelligence, Ceibal, Montevideo, Uruguay

Lidija Kralj, Independent Expert in AI and Data Education, Veliki Bukovec, Croatia

Victor R. Lee, Associate Professor of Learning Sciences and Technology Design, Stanford University, Stanford, California, USA

Tara Nattrass, Managing Director of Innovation Strategy, ISTE+ASCD, Arlington, Virginia, USA (*participated until March 2025)*

Florian Rampelt, Program Director, Future Skills & AI; Managing Director of the AI Campus, Stifterverband, Berlin, Germany

Pati Ruiz, Senior Director, Edtech and Emerging Technologies, Digital Promise, Redwood City, California, USA

Joseph South, Chief Innovation Officer, ISTE+ASCD, Arlington, Virginia, USA

Thierry Viéville, Senior Researcher in Computational Neurosciences, National Research Institute in Computer Science and Control Theory (INRIA), Bordeaux, France

Development Team

Empowering Learners for the Age of AI: An AI Literacy Framework for Primary and Secondary Education is a joint initiative of the European Commission and the Organization for Economic Cooperation and Development (OECD). Code.org and leading international experts support its development. The European Commission co-funded the framework and assisted with expertise built on previous work at the EU level. The development team was responsible for overall project management, hosting focus groups, conducting research, drafting versions of the framework for review, processing feedback, and designing the draft document and website.

Acknowledgements

The TeachAI community provided valuable insights to inform the development of this draft framework.

Illustrations: Abiyasa Adiguna

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Contents

01

Introduction

Why AI Literacy?

As artificial intelligence (AI) increasingly influences how we access information, communicate, and make decisions, AI literacy becomes essential for navigating daily life, creating with purpose, and preparing for the future of learning and work. AI literacy equips learners and educators to understand both the risks and opportunities that AI presents, and to make meaningful and ethical decisions about its use. It helps learners critically evaluate AI's impact on their lives, education, and communities while preparing them to shape the future. However, to fully realize the potential of AI literacy to shape learning, key barriers to implementation must be addressed, including:

- A lack of a shared understanding of what AI literacy is and how to teach it.
- Uncertainty about how AI fits into various subject areas.

This publication serves as a starting point for teachers, education leaders, education policymakers, and learning designers to understand AI literacy and decide how it fits their needs. Establishing a common language about AI literacy is instrumental for consistency across diverse educational settings.

Definition of AI Literacy

AI literacy represents the technical knowledge, durable skills, and future-ready attitudes required to thrive in a world influenced by AI. It enables learners to engage, create with, manage, and design AI, while critically evaluating its benefits, risks, and ethical implications.

This draft definition builds on existing definitions from the EU AI Act, OECD, UNESCO, and other organizations.

What is AI?

Artificial Intelligence (AI) is a "machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments" (OECD, 2024). As defined in the EU AI Act, and in alignment with the OECD definition, "AI system means a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments" (EU AI Act, 2024).

The term "AI" in this publication refers to a broad range of AI systems. When warranted, specific terms such as "generative AI" or "machine learning" are used.

Young People are Experimenting with AI and Need Guidance

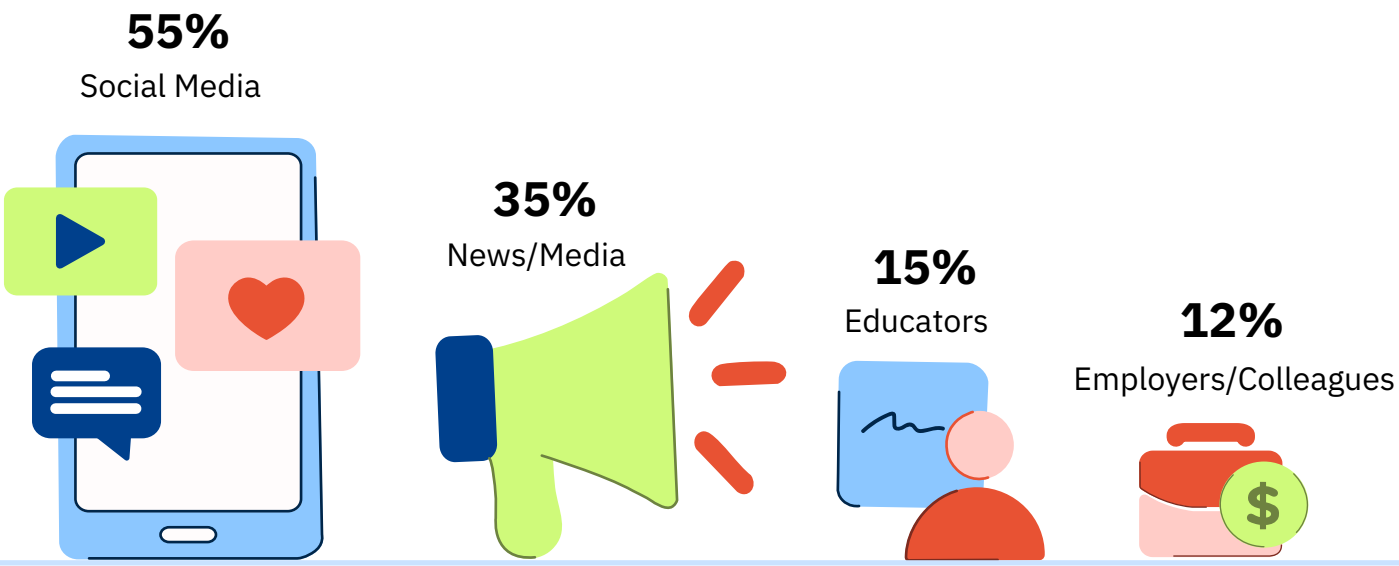
As young people begin using AI in more aspects of their lives, they need guidance to understand what it means, how it works, and how to use it responsibly. The majority of young people are already using AI, experimenting and practicing with AI in both structured and unstructured ways in their personal and professional lives (Merriman & Sanz Sáiz, 2024). But as they use AI, learners may encounter disinformation, misinformation, and bias, raising concerns over privacy and fairness. AI may also create skills and achievement gaps among peers and highlight a disconnect between what learners see as essential to their future and what schools currently provide (Vodafone Foundation, 2024).

AI literacy provides a clear understanding of how AI technologies work and what their responsible use entails, so that learners can make safe and informed decisions. Learners can also benefit from the opportunities AI brings to their lives, work, and studies. AI literacy must be grounded in trusted information, a focus on ethics, and a commitment to social good.

49% of 17- to 27-year-olds struggle with critically evaluating and identifying AI's shortfalls, such as whether AI systems can invent facts.

Source: Merriman & Sanz Sáiz, 2024

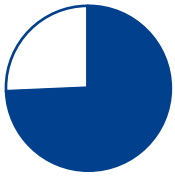
How Does Gen Z Learn About AI?



Source: How can we upskill Gen Z as fast as we train AI? (Merriman & Sanz Sáiz, 2024)
(5,218 respondents distributed globally)

The AI Skills Gap

A 2024 study of 12- to 17-year-olds across Europe reported that:



74%

Believe that AI will play a significant role in their professional lives.

46%

Think their schools adequately prepare them for AI.

44%

Perceive their teachers as well prepared to work with AI applications.

49%

Worry that AI could widen gaps in academic success among peers.

Source: AI in European Schools: A European report comparing seven countries (Vodafone Foundation, 2024) (7,000 students across Germany, Greece, Portugal, Romania, Spain, Türkiye, and the UK)

AI Literacy is an Educational Priority

This framework centers on the role of AI literacy in teaching and learning, as AI's emerging presence in education affects how learners research, write, and collaborate, as well as how educators plan lessons and provide feedback. A foundational understanding of AI supports educators in making their own decisions about when and how to use AI based on the students and content they know best. Without this support, learners may uncritically accept AI-generated content, adopt habits that compromise academic integrity, or neglect skills like critical thinking and empathetic judgment. They may also overlook the opportunities AI offers to enhance their own learning experiences and introduce new skills. Making AI literacy an educational priority ensures that students know how to evaluate, question, and apply AI responsibly in their academic lives, and thrive in contexts beyond the classroom.

Integrating AI literacy is a shared responsibility across the education ecosystem, rather than the duty of any individual educator. Educators are encouraged to embed AI literacy when and where it aligns with their subject and context. The competences outlined in this framework are intended to be developed across a learner's primary and secondary education experience, in formal and informal learning environments, including schools, homes, and community settings.

Intended Audience for the Framework

This framework is designed for teachers, education leaders, education policymakers, and learning designers. It outlines competences and learning scenarios to inform learning materials, standards, school-wide initiatives, and responsible AI policies for primary and secondary education settings.

Teacher

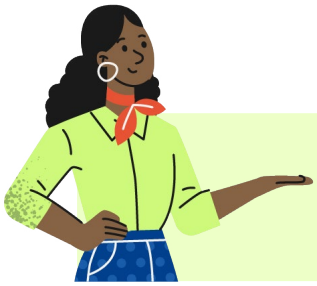
> I need to know how AI can help my students learn and how I can integrate AI literacy into my curriculum during my full school day.

Education Leader

> I want to develop AI literacy initiatives for my school or professional organization and am looking for easy-to-follow guidance.

Education Policymaker

> I help shape AI literacy initiatives to ensure learners and educators are ready for the age of AI, and I want practical, research-backed advice to guide policies.



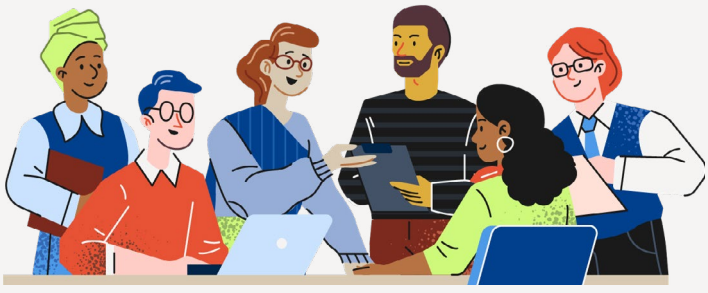
Learning Designer

> I design instructional content and train teachers, and I want to include AI literacy as a key feature in my resources.

Provide Feedback on this Draft

Over the next few months, stakeholders from around the world are encouraged to share their feedback and insights. The final version of the framework will be released in 2026, accompanied by limited exemplars of AI literacy in curriculum, assessment, and professional learning.

We invite you to contribute to these efforts via the following link: teachai.org/ailiteracy/review



02

Foundations of the AILit Framework

Building on Existing Frameworks

The AILit Framework builds on ideas and practices from previous digital competence and AI literacy frameworks. Collectively, these frameworks ensured that the AILit Framework is internationally informed, relevant to educators, and grounded in the ethical, technical, and social dimensions of AI literacy.

The European Commission's Digital Competence Framework for Citizens (DigComp) competence categorization and emphasis on learner agency in its knowledge, skills, and attitudes influenced the content of the AILit Framework, while its realistic employment and learning use cases informed the framework's structure.

UNESCO's AI Competencies for Students and AI Competencies for Teachers influenced AILit Framework's focus on global relevance and implementation. UNESCO's work also prompted consideration for clear distinctions between learner-specific AI literacy outcomes and ways that educators can support these experiences in the classroom.

The Digital Promise AI Literacy Framework's interconnected Modes of Engagement, with cross-cutting AI Literacy Practices and enumerated Types of Use, provided a foundation for how the AILit Framework defines competences and frames learners' specific interactions with emerging technologies.

The AI4K12 5 Big Ideas in AI informed the technical aspects of the framework, including the nature of AI and role of data in the AI training process.

The AILit Framework builds on these efforts, emphasizing a durable foundation, interdisciplinary integration, practical application, and insights from a global community of experts. It outlines essential knowledge, skills, attitudes, and competences that will remain relevant as AI continues to evolve, with a focus on concepts that transcend specific tools or trends. The framework also supports interdisciplinary connections across subjects and empowers learners to engage with AI critically, ethically, and creatively.

The AILit Framework's primary and secondary education scenarios illustrate how AI literacy can be practically implemented in classrooms, and in some cases without the need for AI technologies. Developed in collaboration with international experts in education and learning sciences, the framework is designed to be foundational, adaptable, and globally applicable. Its implementation is supported by a diverse network of partners in curriculum development, research, assessment, and policy. The final version of the framework will be accompanied by classroom-ready exemplars and inform the development of the innovative domain of the PISA 2029 assessment.

Research Process and Themes

This draft is informed by research that included the review of existing frameworks on digital competence, media literacy, and AI literacy, and the analysis of curricula in computer science, data science, social sciences, and career education. It also incorporates multiple research methods such as literature reviews, expert interviews, and focus groups with potential users. Three key themes emerged from this process: technical knowledge, the human skills needed to collaborate effectively with AI, and ethical considerations.

Theme 1: How AI and Machine Learning Work

Understanding AI helps learners dispel misconceptions about the technology and enables a more informed evaluation of its implications. AI isn't magic or all-knowing: It processes data using statistical inferences and logic to produce outputs (Allen & Kendeou, 2023; Touretzky & Gardner-McCune, 2022). It has been trained by data that comes from publicly available information, user-generated content, databases, and real-time interactions collected through sensors and digital systems (AI4K12, 2022; aiEDU, 2024). AI models "learn" not through authentic understanding, but by adjusting statistical weights based on these datasets (Touretzky & Gardner-McCune, 2022). This produces sophisticated outputs but makes AI vulnerable to replicating the harmful and statistical biases embedded in its training data or introduced during development (AI4K12, 2022; aiEDU, 2024; Sparks et al., 2024). The AILit Framework emphasizes that learners must develop a strong understanding of AI's technical foundations, including its reliance on data, probabilities, and inputs. By demystifying these technical underpinnings, learners develop a comprehensive understanding of both AI's capabilities and limitations. Ultimately, they draw connections between how AI works and the ways it might impact themselves or others.

Theme 2: Human Skills to Emphasize for Successful Collaboration with AI Tools

The AILit Framework emphasizes several skills and attitudes that support learners' successful collaboration with AI. Traditional learning competences such as metacognition and critical thinking remain highly relevant to interactions with AI. Communication, questioning, and perspective-taking skills assume new importance in interactions with AI and in broader discussions about its implementation (Thoman & Jollis, 2008; Kafai et al., 2019; aiEDU, 2024). Traditional computational thinking skills, such as abstraction, decomposition, and problem formulation, assume additional relevance beyond the computer science classroom, as students encounter technological challenges in their diverse everyday contexts (Allen & Kendeou, 2023; Dasgupta & Hill, 2021). This framework deliberately centers human capabilities within AI-specific competences, ensuring learners can effectively leverage AI tools while maintaining qualities that technology cannot replicate.

Theme 3: AI's Effects on Individuals, Society, and the Environment

Learners must think critically about how AI already affects them and how it will continue to shape their futures. Rather than treating ethics as a supplement to technical concepts, this framework emphasizes that values, context, and accountability are inseparable from learning with and about AI. This approach aligns with international research and existing policy recommendations and initiatives (European Commission 2020, 2022; Miao et al., 2024; Vuorikari et al., 2022). Learners must understand that AI exists within social and political systems and that algorithmic outputs can reinforce existing patterns of unfairness if not critically examined. This also includes considerations about the ethics of how training data was collected and classified (Buolamwini & Gebru, 2018; Noble, 2018; TeachAI, 2024). Throughout their interactions with AI, learners must reflect on its real-world implications: who can benefit or be harmed by AI systems; what perspectives are represented and excluded in both training data and AI-generated outputs; and, how AI systems influence personal autonomy, ownership, and access to information (White & Scott, 2024; Miao et al., 2024). The AILit framework reinforces ethical consideration through practical competences, mirroring calls to treat ethical evaluation as a core skill in one's digital life. Cultivating AI literacy helps learners navigate a world where technological decisions are deeply intertwined with power, equity, and accountability. It equips them to ask not only what AI can do, but also what it should do and whom it serves.

Additionally, the AILit Framework compels learners to weigh the environmental cost of using AI systems with AI's relevance to specific tasks. At the time of publication, AI systems require significant amounts of energy, materials, and water, while contributing to global carbon emissions (Zewe, 2025; Bashir et. al., 2024). Ongoing efforts to improve sustainability in computing focus on AI's potential to increase energy efficiency or address unique climate-related problems that other technologies cannot (Bashir et. al., 2024). While AI's long-term effects on natural resources have yet to be fully realized, this represents an opportunity for learners to think more broadly about the relationship between the digital and physical world.

The AILit Framework Development Principles

Interdisciplinary

Integrate AI literacy into a wide range of subjects and educational settings.

Foundational

Define a core set of competences needed to demonstrate proficiency in AI literacy.

Illustrative

Include scenarios and exemplars that bring AI literacy to life.

Global

Incorporate insights from educators, researchers, and AI experts worldwide.

Practical

Make AI literacy manageable and attainable in various classroom contexts.

Durable

Identify knowledge and skills that will remain relevant as AI evolves.

The Role of Teachers and Educators

Teachers and educators play a key role in developing learners' AI literacy by integrating AI concepts into concrete classroom practice. They help learners connect abstract ideas to specific subject matter, guide inquiry into how AI systems function, and create a supportive space for discussions about fairness, bias, and real-world impacts (Allen & Kendeou, 2023; Chiu et. al., 2021). The primary and secondary education scenarios that accompany each competence in the framework highlight ways that students can develop and demonstrate AI literacy in educational settings. However, it is up to educators to decide when to introduce AI tools, how to scaffold understanding, and what it means to assess student learning in a rapidly-changing technological landscape (Allen & Kendeou, 2023; Chiu & Chai, 2020; European Commission, 2022; Miao & Cukurova, 2024). Even more, they promote the responsible use of AI based on available guidelines from their education system, and use their expertise to make age-appropriate decisions about its use (Miao & Cukurova, 2024). These decisions stem from an educator's unique relationship with their students and their content expertise.

Educators need targeted support to build their own AI competences and to develop effective pedagogies for guiding students through this learning journey. The AILit Framework offers different ways for educators to introduce AI literacy to their learning environments. Its knowledge statements emphasize a clear understanding of AI's technical foundations, equipping educators to approach AI literacy with confidence and accuracy. The accompanying skills and attitudes, grounded in learning theory, metacognition, and recognition of uniquely human capacities, ensure that AI literacy can be meaningfully integrated into existing classroom practices. Learner-centered competences and education scenarios help teachers identify and prioritize relevant AI literacy outcomes that can take place in their classrooms. To further support implementation, the final version of the AILit Framework will also include a limited number of teaching and learning exemplars. Ultimately, educators' long-term success in teaching AI literacy depends on integrating new learning goals with existing priorities and having access to high-quality initial teacher training and continuous professional development that builds AI-informed pedagogy.

Learner Personas: What Does AI Literacy Look Like in Action?

These personas illustrate what it looks like when learners put AI literacy skills into action. They serve as starting points for imagining an AI-literate world, reflecting the many ways these skills take shape.

Sofia

10 years

AI in Action!

With her mother's guidance, Sofia uses generative AI to explore different plots and experiment with dialogue for stories she writes. She describes her own ideas and possible themes to the AI tool, then reflects on whether each suggestion feels right for her characters before making changes to her work. Sofia appreciates that AI introduces new ideas to consider, but trusts her own creative vision.

Jun

13 years

AI in Action!

Jun helps organize a school volunteering event by collecting availability, scheduling the day, and managing last-minute changes. He uses AI to draft schedules, then assigns volunteers himself based on classmates' personalities and strengths. AI automates logistics for Jun, helping him focus on building effective, collaborative teams for the event.

Omar

15 Years

AI in Action!

Omar set up an AI voice assistant for his parents to help them with everyday tasks, such as creating the family's schedule or grocery list. When he started seeing specific product recommendations on his social media feeds, Omar changed his account settings to prevent the system from using his family's information for targeted advertising.

Anika

18 Years

AI in Action!

As part of her studies, Anika is experimenting with designing a wellness app that uses an AI model to suggest mental health resources. While testing the app, she notices that it sometimes recommends options that reinforce gender stereotypes. Before going further with the app she makes a point to refine the model's responses to prompts and reviews the content it recommends.

03

Framework Structure

The Four Domains of AI Literacy

The four domains of the AILit Framework represent different ways in which learners interact with AI. Learners can build proficiency across multiple domains without developing full proficiency in any single one. The four domains encompass 22 competences.

Engaging with AI involves using AI as a tool to access new content, information, or recommendations. These situations require learners to first recognize AI's presence, then evaluate the accuracy and relevance of AI outputs. Learners must develop a fundamental understanding of AI's technical foundations in order to critically analyze its capabilities and limitations.

Creating with AI consists of collaborating with an AI system in a creative or problem-solving process. It involves guiding and refining AI output through prompts and feedback, while ensuring the content remains fair and appropriate. It also involves ethical considerations related to content ownership, attribution, and the responsible use of existing materials.

Managing AI requires intentionally choosing how AI can support and enhance human work. This includes assigning structured tasks to AI, such as organizing information, so humans can focus on areas requiring creativity, empathy, and judgment. AI systems can simulate a variety of roles, acting as an analyst, debate partner, or career guide. Learners who manage AI's actions learn to delegate tasks thoughtfully, guide AI outputs with clear instructions, and assess whether AI's role aligns with their goals and values. This domain helps learners build agency, ensuring that AI works for them and that its use remains ethical and human-centered.

Designing AI empowers learners to understand how AI works and connect it to its social and ethical impacts by shaping how AI systems function. Through hands-on exploration in an education context, students examine how data, design choices, and model behavior influence the fairness, usefulness, and impact of AI systems. The goal is not to develop commercial products or put them into service, but to build the confidence and capacity to shape AI for human good by understanding the principles underpinning the design of AI from an early age.

Knowledge, Skills, and Attitudes

While competences may evolve over time or in different contexts, the framework's knowledge, skills, and attitudes provide a durable foundation for AI literacy. They prepare learners to responsibly interact with existing technologies and navigate new ones as they arise. Each competence includes primary and secondary education learning scenarios that apply to various subject areas and educational contexts. These scenarios provide practical starting points for educators to include AI literacy in their own classrooms, with and without direct access to AI. Find the full text of the knowledge, skills, attitudes, competences, and learning scenarios in Sections 4 and 5.

Knowledge

The knowledge statements in the framework focus on conceptual knowledge, outlining the technical and societal understandings that learners need to apply and engage with AI systems. These concepts include how AI processes data, how AI differs from human thinking, and how bias can emerge in AI systems.

Skills

The skills demonstrate how fundamental abilities, such as critical thinking, creativity, and computational thinking, apply in an AI context. They guide learners in using AI effectively and ethically, ensuring that learners actively shape how AI fits into their lives.

Attitudes

The attitudes reflect mindsets and dispositions that prepare learners to engage with AI, not only with technical skills, but also with an awareness of AI's impact on themselves and others. These include a sense of curiosity and adaptability in using AI systems, as well as a readiness to question outputs and a commitment to using AI responsibly.

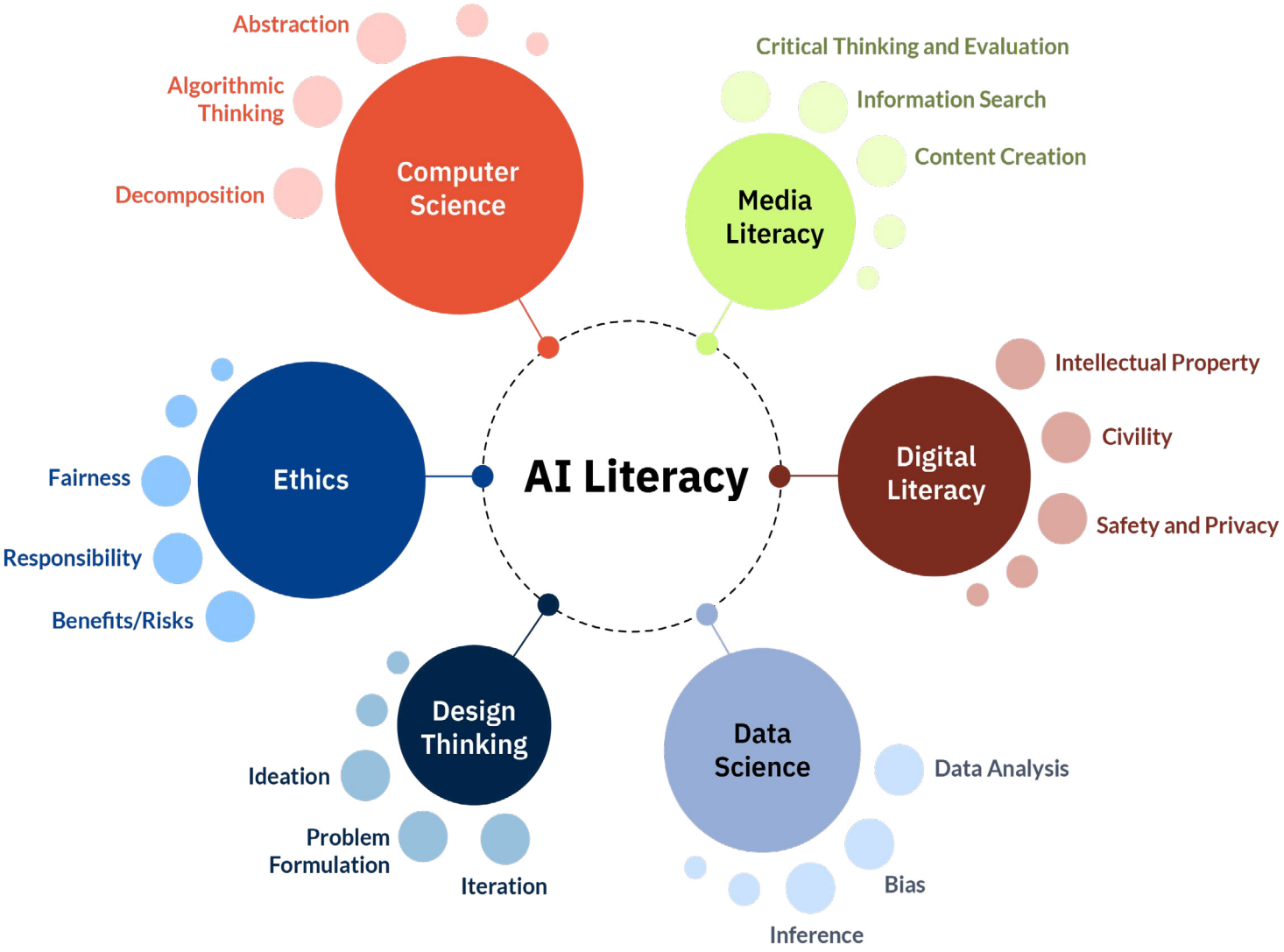
Ethics in the Framework

Ethical principles appear throughout the framework's knowledge, skills, and attitudes, and are reflected in multiple competences. For example, the competence "Evaluate whether AI outputs should be accepted, revised, or rejected." requires learners to recognize that AI's ability to generate human-like content introduces risks, such as misinformation, disinformation, or manipulation. Learners must apply critical thinking to detect misleading outputs and adopt a responsible attitude to ensure AI is used ethically.

> ***"The EU AI Act reminds us that AI literacy is key for educators as they empower students to navigate the benefits and risks of AI. By prioritizing AI literacy, we are empowering this generation of students with critical thinking and informed decision-making skills that will tap into AI's potential and help them thrive in a rapidly changing world.***
>
> - Romina Cachia, Team Leader and Scientific Researcher, Joint Research Centre - European Commission

Relationship to Other Topics and Disciplines

The AILit Framework reflects relevant knowledge, skills, and attitudes found across multiple topics and disciplines. AI literacy draws from areas such as ethics, computer science, media and digital literacy, data science, and design thinking—connecting technical understanding with critical evaluation, responsible use, and creative problem-solving. These interdisciplinary links reinforce the idea that AI literacy is a foundation for navigating and shaping the role of AI across contexts.



04

Knowledge, Skills, and Attitudes

Knowledge

The Nature of AI

AI Reflects Human Choices and Perspectives

AI Reshapes Work and Human Roles

AI's Capabilities and Limitations

AI's Role in Society

Skills

Critical Thinking: Evaluate AI-generated content.

Creativity: Collaborate with AI to create and refine ideas.

Computational Thinking: Decompose problems and provide instructions.

Self and Social Awareness: Recognize AI's influence.

Collaboration: Work effectively with AI and humans.

Communication: Explain how AI is used.

Problem Solving: Determine when and how to use AI.

Attitudes

Responsible

Curious

Innovative

Adaptable

Empathetic

Knowledge

The knowledge statements in the framework include facts, concepts, ideas, and processes reflecting disciplinary, interdisciplinary, epistemic, and procedural knowledge. They outline the technical and societal understandings that learners need to apply and engage with AI systems.

The Nature of AI

K1.1: AI systems use algorithms that combine step-by-step procedures with statistical inferences (e.g., weights and biases) to process data, detect patterns, and generate probable outputs.
K1.2: Machines "learn" by inferring how to generate outputs such as predictions, content, and recommendations that influence physical or virtual environments, in response to information from the input they receive. They do so with varying levels of autonomy and adaptiveness after deployment.
K1.3: Generative AI uses probabilities to generate human-like outputs across various modalities (e.g., text, audio, visuals) but lacks authentic understanding and intent.
K1.4: AI systems operate differently depending on their purpose, whether to create, predict, recommend, or respond.

Explanation: AI systems—including, but not limited to, classifiers, recommenders, predictive models, generative AI, and autonomous agents – operate by processing vast datasets to identify statistical patterns. As a broad class of technology, AI simulates intelligent behavior. Whether generating content, sorting information, making predictions, or executing sequences of actions, these systems aim to produce outputs that are statistically most likely to meet a given objective. While these systems can produce highly sophisticated and human-like outputs, they do so without comprehension, awareness, or intent. Understanding this distinction dispels the misconception that AI is all-knowing or consistently correct, and helps learners assess its reliability, limitations, and potential impact.

AI Reflects Human Choices and Perspectives

K2.1: Building and maintaining AI systems relies on humans to design algorithms, collect and label data, and moderate harmful content. These systems reflect human choices, assumptions, and labor practices, shaped by unequal global conditions.
K2.2: AI is trained on vast datasets sourced from publicly available information, user-generated content, curated databases, and real-world data collected through sensors, interactions, and digital systems.
K2.3: AI systems gather new data from interactions with users; decisions, processes, and outputs may be directly influenced by inputs in real time.
K2.4: AI systems are trained to identify patterns among data elements that humans have selected, categorized, and prioritized.
K2.5: Bias inherently exists in AI systems, which can also reflect societal biases embedded in its training data or algorithm design. Humans can perpetuate or mitigate harmful biases in AI systems during the design, development, or testing process.

Explanation: AI is not neutral; it is shaped by the decisions of those who build it. Humans select training data, which may have been collected unethically or feature inaccurate and incomplete representations of individuals and perspectives. They also impart judgment during the classification of that training data, which informs the algorithms that produce AI systems' outputs. While statistical and societal biases may exist undetected in training data or be reinforced in other aspects of the training

process, AI's prevalence in decision-making and everyday life can replicate those biases in ways that harmfully affect different groups of people. This makes ethics, algorithmic fairness, representation, explainability, and accountability essential to AI literacy.

AI Reshapes Work and Human Roles

K3.1: AI systems automate structured tasks, augment decision-making, and transform industries, requiring humans to adapt, reskill, and upskill.
K3.2: AI integration requires individuals to determine which tasks are best suited for machines and which require human intervention or expertise.
K3.3: While AI can support analysis and prediction, humans must be responsible for decisions that reflect human judgment and ethical considerations.

Explanation: The impact of AI across industries emphasizes the importance of adaptability and lifelong learning. While AI systems can increase efficiency for many types of tasks, these tools might not always be the best choice; humans must hone their knowledge of AI's capabilities and their domain expertise to manage AI systems effectively. Success in an AI-integrated workforce entails developing fluency in a range of technologies, staying current with new tools and techniques, and leveraging human judgment in decision-making starting from early ages, in and outside of formal education. This combination ensures that AI complements human skills and augments human capacities, rather than replaces them.

AI's Capabilities and Limitations

K4.1: AI excels at pattern recognition and automation but lacks emotions, ethical reasoning, context, and originality.
K4.2: AI requires vast amounts of computing power and data, which consumes energy, thus demanding limited natural resources and increasing carbon emissions. AI's long-term sustainability impact, both positive and negative, largely depends on how it is implemented and utilized.
K4.3: The capability of generative AI, particularly large language models (LLMs), to generate human-like content can make it difficult to distinguish fact from fabrication, increasing the potential to generate misinformation, deepfakes, or manipulative materials.

Explanation: AI lacks a true grasp of real-world context, human values and behaviors, and nuance—even when systems modify their own outputs to respond to a user's complex emotional states. While AI systems can analyze enormous amounts of data, they are prone to bias, confabulation, and misuse and rely on vast but finite natural resources. A human must make judgments about specific contexts that AI systems cannot, including whether the benefits of an AI tool is worth the environmental or societal cost. AI literacy requires critical thinking about when, where, and how AI should be applied to ensure it serves human needs equitably.

AI's Role in Society

K5.1: AI plays an increasingly prevalent role in decision-making that impacts humans, from hiring practices to healthcare to criminal justice.
K5.2: AI systems must be understood, audited, and regulated to ensure that their use leads to more benefits than harm for individuals and society.
K5.3: Generative AI and Large Language Models create content based on existing materials in training data, which includes copyright-protected work, thereby raising questions about authenticity,

authorship, and ownership.
K5.4: Ethical AI design encompasses fairness, transparency, explainability, accountability, respect for privacy, and legal compliance.

Explanation: AI systems do not exist in isolation; their use reflects, reinforces, and reshapes societal values and decisions. Without careful oversight, AI-driven decision-making can amplify bias and cause widespread harm. AI systems introduce implications for how learners should think about truth, authorship, and ownership in digital spaces. Individual and system-level guidance and regulations can help address areas where AI intersects with fundamental rights, such as surveillance and data privacy. Familiarity with ethical AI design principles helps learners to critically assess how AI systems are built and deployed. Without the understanding, learners risk accepting AI outputs at face value rather than asking whom they benefit or harm. To ensure AI serves society responsibly, we must continuously question and evaluate its effects and guide its use to mitigate its risks.

Skills

These skills represent fundamental human abilities applied to an AI context. They guide learners in using AI ethically and ensure that learners actively shape how AI fits into their lives.

Critical Thinking: Evaluate AI-generated content for accuracy, fairness, and bias to make informed and ethical decisions.

How can I check the accuracy of AI-generated outputs and reduce the risk of harmful bias? How do I know if AI is relevant or appropriate?

Practicing critical thinking in an AI context involves verifying whether the information provided by an AI system is accurate, relevant, and fair. Because AI systems can generate convincing but incorrect or biased content, learners must actively work to identify potential misinformation and weigh outputs with other sources of information. These actions result in a greater awareness of AI's impact on the broader information system. This process uncovers hidden biases or gaps and ensures AI outputs support ethical decision-making. By developing these skills, learners exercise media literacy, digital literacy, and digital citizenship, while becoming more discerning users of AI.

Creativity: Collaborate with AI to create and refine original ideas while considering issues of ownership, attribution, and responsible use.

How can I use AI responsibly to bring my creative visions to life?

Exercising creativity when using AI involves interacting with AI systems to brainstorm, generate, and refine original ideas. As learners use AI systems to explore possibilities beyond what they had originally envisioned, they must consider AI's impacts on originality, ownership, attribution, and copyright. By engaging creatively and responsibly with AI systems, learners stay accountable for the ideas they shape and share.

Computational Thinking: Decompose problems and provide instructions in ways that allow AI systems to effectively contribute to solutions.

How do I frame my problem so that AI can help solve it?

Computational thinking skills help approach and frame problems in ways that leverage the capabilities of AI and account for its limitations. This involves decomposing, or breaking down complex problems into structured components, and communicating goals and constraints in a manner that AI systems can effectively process (e.g., prompt engineering). By providing use cases, counterexamples, and expected outcomes to AI systems, learners refine their own communication skills, engage with metacognitive strategies, and make progress toward their goals.

Self and Social Awareness: Recognize how AI influences personal choices, relationships, and communities, and reflect on its broader societal and environmental impact.

How does AI impact me and others?

Self and social awareness are vital when interacting with AI. This skill begins with recognizing AI's presence in daily life and understanding how it influences decisions in both the digital and physical worlds. This extends beyond mere identification and applies to thoughtful consideration of AI's broader effects on individuals, communities, and the environment. Learners might also engage metacognitively with AI's effects on their own behaviors, thoughts, and learning processes. By recognizing AI's influence, learners are better equipped to evaluate AI-generated content and monitor how these technologies influence their thoughts and behaviors over time.

Collaboration: Work effectively with AI and humans by communicating clearly, giving feedback, and navigating shared tasks.

How can I collaborate transparently and ethically with AI to accomplish a goal?

Collaboration with AI relies on positive and productive interactions between humans and AI systems. This requires the ability to both give feedback and ask for help in and outside of the digital world. As learners collaborate with AI systems, they demonstrate agency alongside metacognition. By collaborating tactfully, assessing strengths in context, and honing relationship-building skills, learners develop the ability to navigate new and complex situations.

Communication: Explain how AI is used in a way that promotes transparency, avoids anthropomorphism, and encourages responsible use.

How do I describe AI use for myself and others?

Communicating about AI involves explaining when and how AI systems are used, including how they may have shaped content or contributed to decisions that impact others. This skill emphasizes that AI-literate learners have a responsibility to accurately describe how AI works in ways that do not

mischaracterize or assign human traits to its capabilities. When learners choose their words to promote transparency and responsible use of AI systems, they uphold ethical practices and encourage informed conversation about AI's implications.

Problem Solving: Determine when and how to use AI for a task by assessing its capabilities, risks, and ethical implications.

How do I choose the right type of tool for the task at hand?

Using AI to address a problem begins with thoughtful reflection on the task at hand and includes thorough consideration of whether AI's capabilities meet the task's technical and ethical requirements. To do this, learners might test specific AI systems for reliability and potential to replicate harmful bias. Learners problem-solve with AI when they ask themselves how AI systems might add value, where human judgment should come into play, and when to avoid AI use altogether.

Attitudes

These attitudes reflect the mindsets and dispositions that prepare learners to engage with AI, not only with technical skills, but also with an awareness of AI's impact on themselves, others, and society.

Responsible

Learners think carefully about how they use AI and are accountable of their choices. They consider both the intended and the potential unintended effects of their actions, and are committed to preventing harm to others. They believe everyone has the right to understand how AI affects them and to make informed decisions about its use.

Curious

Learners are eager to explore what AI can do today and how it might evolve in the future. They want to understand how AI affects their personal lives and future careers. They consider learning to be an ongoing process and enjoy experimenting, believing that meaningful discoveries happen through exploration.

Innovative

Learners seek to use AI to address real-world challenges and embrace new opportunities. They experiment, try different approaches, and think creatively to solve a problem. They believe AI can be a powerful tool for creating positive change in their own lives and the lives of others.

Adaptable

Learners show perseverance and flexibility when working with AI. They are open to diverse ideas, perspectives, and approaches. They understand that collaborating with AI is an iterative process shaped by feedback and revision.

Empathetic

Learners thoughtfully examine how AI impacts individuals, communities, and the environment. They weigh both the benefits and potential risks of using AI, understanding that its impact can vary for different groups of people.

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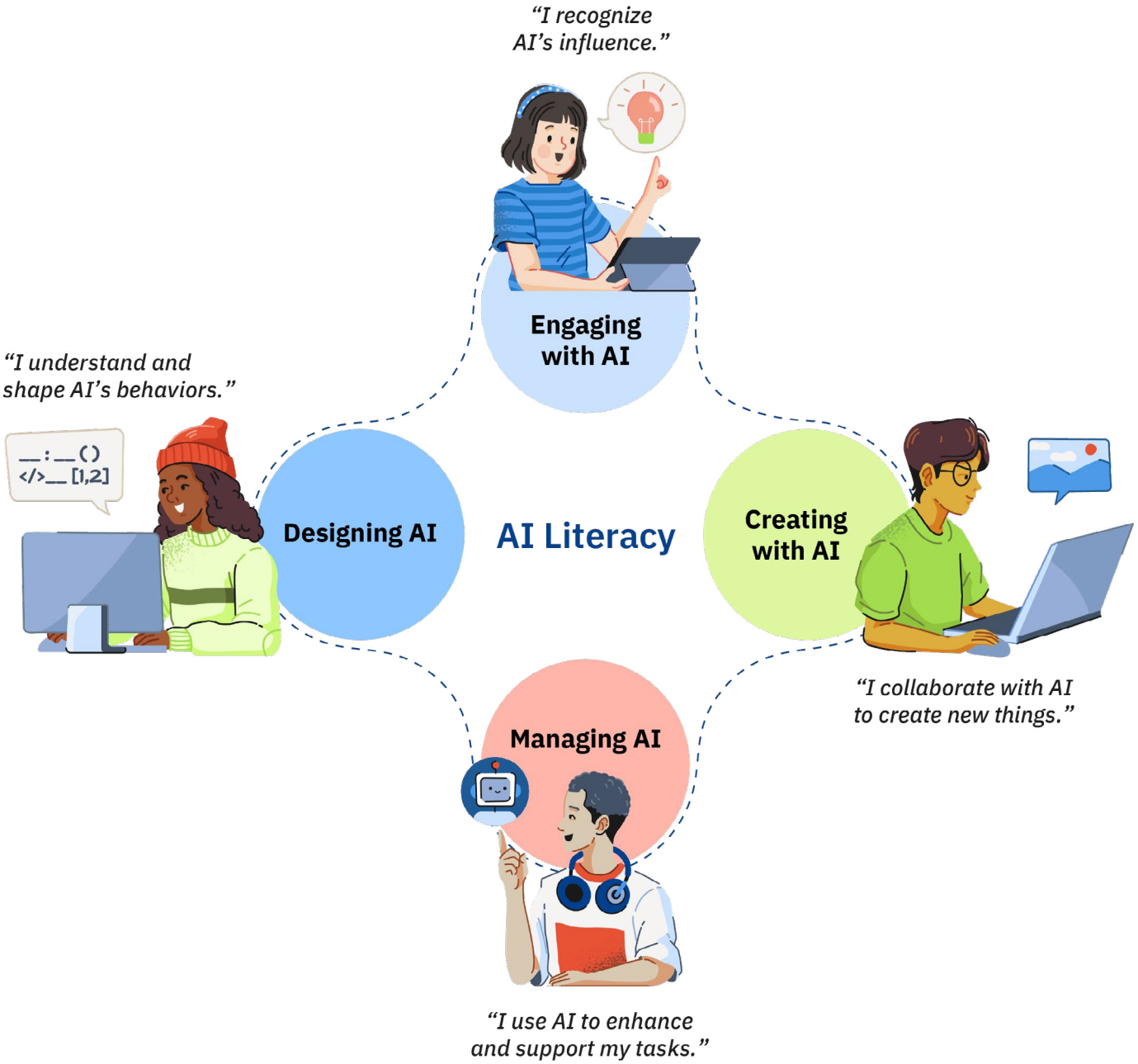
Competences



The Anatomy of a Competence

Each competence is a learning expectation that reflects technical knowledge, durable skills, and future-ready attitudes. Although skills and attitudes have broad applicability, the framework highlights combinations that best support each competence. Each competence is accompanied by primary and secondary education scenarios that illustrate how learners can develop the respective competence in the classroom, under the guidance of a teacher.

Skills

Problem Solving: Determine when and how to use AI for a task by assessing its capabilities, risks, and ethical implications.
Computational Thinking: Decompose problems and provide instructions in ways that allow AI systems to effectively contribute to solutions.

Attitudes

Responsible; Innovative

"Decide whether to use AI systems based on the nature of the task."

Knowledge

K4.1: AI excels at pattern recognition and automation but lacks emotions, ethical reasoning, context, and originality.
K5.4: Ethical AI design encompasses fairness, transparency, explainability, accountability, respect for privacy, and legal compliance.

Primary Education Scenario

Consider everyday tasks (e.g., writing a birthday card) and assess when AI use is appropriate, considering the need for individuality, creativity, or human judgment.

Secondary Education Scenario

Determine whether specific AI systems should be avoided, or used to complete specific tasks, based on how well each option aligns with an assignment's learning objectives.

Engaging with AI

Engaging with AI in daily life involves using AI as a tool to access new content, information, or recommendations. These situations require learners to first recognize AI's presence, then evaluate the accuracy and relevance of AI outputs. Learners must develop a fundamental understanding of AI's technical foundations in order to critically analyze its capabilities and limitations.

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Engaging with AI is more than just having digital skills—it demands critical thinking, media literacy, and the ability to challenge AI outputs, identify misinformation, and understand how data and ideas are used.

- Kari Kivinen, Education Outreach Expert, European Intellectual Property Observatory

Engaging with AI Competences

1 Recognize AI's role and influence in different contexts.

Knowledge: K1.4, K5.1 **Skills:** Self and Social Awareness **Attitudes:** Curious, Responsible

Learners identify the presence of AI in everyday tools and systems and consider its purpose in various situations, such as content recommendations or adaptive learning. They reflect on how AI influences their choices, learning, and perceptions.

Primary Education Scenario

List familiar digital interactions (e.g., using a web camera, video recommendations) and discuss if and how each uses AI.

Secondary Education Scenario

Explore how an online math platform uses real-time data to present content at different levels of difficulty.

2 Evaluate whether AI outputs should be accepted, revised, or rejected.

Knowledge: K4.1, K4.3 **Skills:** Critical Thinking **Attitudes:** Responsible

Learners critically assess the accuracy and fairness of AI-generated content, recognizing that AI can generate misinformation or biased outputs. They decide whether to trust, modify, or override AI outputs by considering their potential impact on themselves and others.

Primary Education Scenario

Compare an AI tool's step-by-step math solution to a learner's explanation to determine if the AI's process aligns with techniques that students have already learned.

Secondary Education Scenario

Prompt a language model with questions about historical events and evaluate the accuracy and bias of its responses by cross-referencing with reliable sources.

3 Examine how predictive AI systems provide recommendations that can inform and limit perspectives.

Knowledge: K1.1, K4.3 **Skills:** Self and Social Awareness **Attitudes:** Curious

Learners explore how AI uses data patterns to offer suggestions (e.g., what to watch, buy, or read) and consider how those recommendations may both support learning or decision-making and reinforce narrow viewpoints or biases.

Primary Education Scenario

Count by 2s, 5s, and 10s to introduce how humans recognize and predict sequences, then explore how AI generates recommendations based on patterns.

Secondary Education Scenario

Examine how social media algorithms can contribute to spreading disinformation or misinformation about a public health issue and compare the responsibilities of individuals and platforms in addressing the harm.

4 Explain how AI could be used to amplify societal biases.

Knowledge: K2.1, K2.5 **Skills:** Critical Thinking, Self and Social Awareness, Problem Solving **Attitudes:** Empathetic, Responsible

Learners investigate how AI systems, such as facial recognition or hiring algorithms, reflect human decisions and data, and identify ways that bias in data or design can lead to unfair outcomes for different groups of people.

Primary Education Scenario

Split several characters from different stories into categories, then discuss how using rules or data to group people can be useful or treat some people unfairly.

Secondary Education Scenario

Examine how an AI system was trained to recognize faces, evaluate potential sources of bias in the training data, and suggest steps developers could take to improve fairness.

5 Describe how AI systems consume energy and natural resources.

Knowledge: K4.2 **Skills:** Self and Social Awareness **Attitudes:** Responsible

Learners explore the environmental impact of AI, including its energy and data infrastructure, and consider how responsible design and use can support sustainability.

Primary Education Scenario

Create an infographic illustrating AI's environmental impacts, including the electricity it consumes, the devices it operates on, and the materials required to manufacture those devices.

Secondary Education Scenario

Compare AI's environmental costs with efforts to reduce them, then debate whether using AI in specific scenarios is environmentally responsible.

6 Analyze how well the use of an AI system aligns with ethical principles and human values.

Knowledge: K1.4, K3.3, K5.4 **Skills:** Self and Social Awareness, Critical Thinking, Problem Solving **Attitudes:** Responsible

Learners assess whether using AI in a given situation, such as surveillance cameras in public spaces or moderating online content, supports values such as fairness, transparency, and privacy. They reflect on whether its use is appropriate, beneficial, or potentially harmful.

Primary Education Scenario

Evaluate if AI is used kindly, fairly, and respectfully in multiple scenarios, such as editing or sharing someone's photo without permission.

Secondary Education Scenario

Use an AI writing assistant to revise a personal narrative, then reflect on whether its suggestions supported authentic voice or changed the story undesirably.

7 Connect AI's social and ethical impacts to its technical capabilities and limitations.

Knowledge: K2.1, K5.2 **Skills:** Self and Social Awareness, Problem Solving **Attitudes:** Curious, Empathetic, Responsible

Learners explore how AI's strengths and weaknesses affect how it's used in society. They connect the design and function of AI systems to real-world impact on people, communities, and systems.

Primary Education Scenario

Discuss why a smartphone voice assistant sometimes doesn't understand commands or questions, and when to turn to another source for information.

Secondary Education Scenario

Investigate how predictive AI calculates credit scores or loan eligibility. Then explore which data is used, what bias might appear, and how mathematical models can reinforce inequality.

Creating with AI

Creating with AI consists of collaborating with an AI system in a creative or problem-solving process. It involves guiding and refining AI output through prompts and feedback, while ensuring the content remains fair and appropriate. It also involves ethical considerations related to content ownership, attribution, and the responsible use of existing materials.

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Where does creativity come from? We want to think it’s all in one person’s head. But even at professional design schools, they put people in groups in these big, colorful rooms with sticky notes because having those things helps you to be more creative. It helps you to get out more ideas. So, LLMs used well can be similar. If I have a thought partner that I can improvise with, that could actually be a great creativity amplifier.

- Victor R. Lee, Associate Professor of Learning Sciences and Technology Design, Stanford University

Creating with AI Competences

1 Use AI systems to explore new perspectives and approaches that build upon original ideas.

Knowledge: K4.1 **Skills:** Creativity **Attitudes:** Innovative, Adaptable

Learners experiment with AI to expand their thinking, generate new ideas, or consider alternative viewpoints. They stay accountable for the final content while letting AI support their creative process.

Primary Education Scenario

Evaluate AI-generated images to create story settings based on learner ideas (e.g., "a jungle in space"), then write new stories inspired by unexpected results.

Secondary Education Scenario

Use AI to develop counterarguments for a class debate to anticipate and address opposing viewpoints.

2 Visualize, prototype, and combine ideas using different types of AI systems.

Knowledge: K1.4 **Skills:** Collaboration, Creativity **Attitudes:** Curious, Adaptable

Learners try out AI tools that operate in different formats (text, images, music, etc.) to explore and refine new ideas. They combine outputs into a meaningful product or solution.

Primary Education Scenario

Use an AI music tool to create a short song to describe a season, then experiment with different moods, instruments, and lyrics, and combine learners' favorite parts into a final track.

Secondary Education Scenario

Use AI tools to explore different formats (e.g., text, graphics, music) for a public awareness campaign and combine elements from each with existing ideas to create a final product.

3 Collaborate with generative AI systems to elicit feedback, refine results, and reflect on thought processes.

Knowledge: K2.3 **Skills:** Computational Thinking, Creativity **Attitudes:** Innovative, Adaptable

Learners engage in an iterative process with AI by testing prompts and refining AI-generated outputs, and then reflect on how the interaction shaped their thinking and choices.

Primary Education Scenario

Use an AI writing tool to improve a class story, by choosing which suggestions support their creative vision, and discussing how their ideas changed through the process.

Secondary Education Scenario

Use an AI coding assistant to fix errors and modify code for a video game, then reflect on how the tool affected the debugging process.

4 Analyze how AI can safeguard or violate content authenticity and intellectual property.

Knowledge: K5.3 **Skills:** Problem Solving, Self and Social Awareness **Attitudes:** Empathetic, Responsible

Learners explore how AI-generated content may borrow from or replicate existing work, and consider when that use is fair, original, or in need of attribution. They reflect on the ethical implications of AI-assisted creation.

Primary Education Scenario

Compare original student work to AI-generated poems, then discuss what makes something "original" and how to give credit when AI tools help create content.

Secondary Education Scenario

Research how certain artists' styles appear in AI-generated art, then debate whether the use of the artists' content is fair or requires consent.

5 Explain how AI systems perform tasks using precise language that avoids anthropomorphism.

Knowledge: K1.3, K1.4 **Skills:** Communication **Attitudes:** Responsible

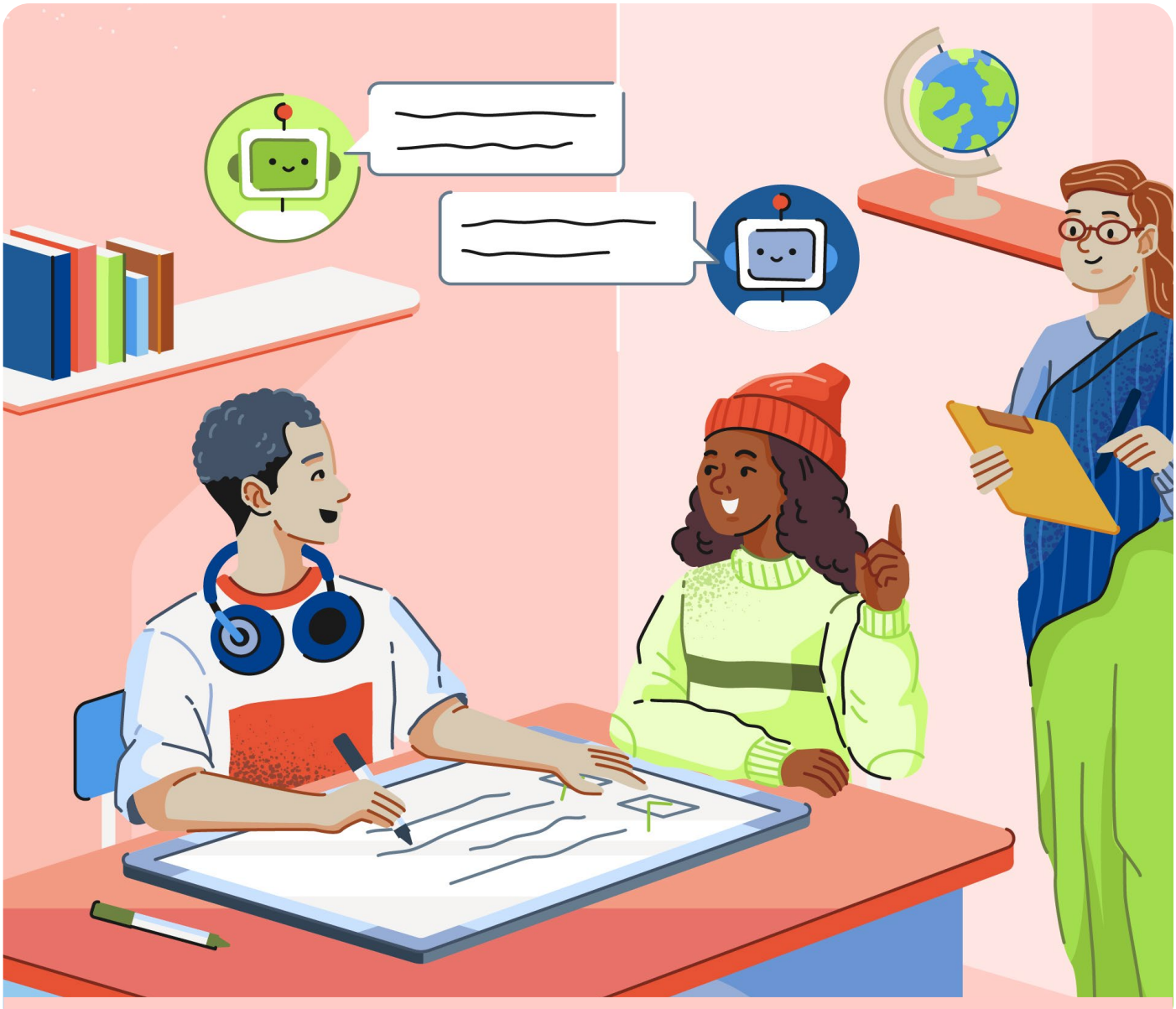
Learners describe how AI operates in realistic, accurate terms, avoiding language that suggests AI has human feelings or understanding. They understand that their language can either clarify or perpetuate misconceptions about AI.

Primary Education Scenario

Compare art created by a human with art generated by AI, and discuss how artists express themselves while generative AI uses patterns in existing data.

Secondary Education Scenario

Describe how a generative AI system can create a song based on prompts, learned patterns, and training data, without assigning it intent, emotion, or creativity.



Managing AI

Managing AI requires intentionally choosing how AI can support and enhance human work. This includes assigning structured tasks to AI, such as organizing information, so humans can focus on areas requiring creativity, empathy, and judgment. AI systems can simulate a variety of roles, acting as an analyst, debate partner, or career guide. Learners who manage AI's actions learn to delegate tasks thoughtfully, guide AI outputs with clear instructions, and assess whether AI's involvement aligns with their goals and values. This domain helps learners build agency, ensuring that AI works for them and that its use remains ethical and human-centered.

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Effectively managing AI starts with students deciding if AI is truly needed. This requires setting clear learning goals, decomposing problems, and distributing work appropriately with AI tools being used to augment human capacity. Students must be able to communicate transparently about their use of AI and follow guidelines that ensure fairness while centering justice and human judgment.

- Pati Ruiz, Senior Director, EdTech and Emerging Technologies, Digital Promise

Managing AI Competences

1 Decide whether to use AI systems based on the nature of the task.

Knowledge: K4.1, 5.4 **Skills:** Problem Solving, Computational Thinking **Attitudes:** Responsible, Innovative

Learners assess whether AI is the right tool for a specific situation. They consider factors like the complexity of the task, the need for human judgment, and the ethical implications.

Primary Education Scenario

Consider everyday tasks (e.g., writing a birthday card) and assess when AI use is appropriate, considering the need for individuality, creativity, or human judgment.

Secondary Education Scenario

Determine whether specific AI systems should be avoided, or used to complete specific tasks, based on how well each option aligns with an assignment's learning objectives.

2 Decompose a problem based on the capabilities and limitations of both AI systems and humans.

Knowledge: K4.1 **Skills:** Collaboration, Computational Thinking, Problem Solving **Attitudes:** Innovative, Adaptable

Learners break down a complex task and decide which parts can be handled by AI and which require human involvement. They distribute tasks based on their nature and human and AI strengths.

Primary Education Scenario

Use AI to brainstorm science fair ideas and gather background information, while the class votes on the best project, designs and carries out the experiment, and interprets the results.

Secondary Education Scenario

Examine a historical question using AI to summarize primary sources and commentaries, while students assess context, detect bias, discuss resources and make new interpretations.

3 Direct generative AI systems by providing specific instructions, appropriate context, and evaluation criteria.

Knowledge: K1.3, K2.3 **Skills:** Collaboration, Computational Thinking **Attitudes:** Innovative, Adaptable

Learners practice prompt engineering by giving AI clear, structured inputs to guide outputs that meet expectations and goals.

Primary Education Scenario

Construct a prompt that another student could use to draw a poster, including the poster topic, what not to do, and what a quality result should look like.

Secondary Education Scenario

Experiment with instructing an AI chatbot to take on the role of a debate partner by engineering prompts that define its purpose, tone, and task. Then test and evaluate how effectively it supports learning goals.

4 Delegate tasks to AI systems to appropriately automate or augment human workflows.

Knowledge: K3.1 **Skills:** Collaboration, Problem Solving **Attitudes:** Innovative

Learners identify opportunities to offload repetitive or structured tasks to AI, allowing people to focus on creativity, ethics, or decision-making.

Primary Education Scenario

Plan a writing process where AI helps with spelling corrections and synonym suggestions, while learners focus on storytelling, character development, and creative plot twists.

Secondary Education Scenario

Use AI to generate variations of a concept based on a group's initial ideas, while team members evaluate the options, refine the final version, and present their rationale.

5 Develop and communicate guidelines for using AI systems that align with human values, promote fairness, and prioritize transparency.

Knowledge: K5.4 **Skills:** Communication, Critical Thinking, Self and Social Awareness **Attitudes:** Responsible, Empathetic

Learners create or reinforce responsible guidelines for AI use in academic contexts. They consider existing guidelines from local, national, or international organizations, such as the European Commission or the OECD.

Primary Education Scenario

Create a classroom poster outlining fair ways to use an AI tool, such as crediting sources and seeking a teacher's approval before using it for assignments.

Secondary Education Scenario

Lead a workshop for peers on common AI tools, sharing guidelines for AI use that promote honesty, respect for intellectual property, and critical thinking.

Designing AI

Designing AI empowers learners to understand AI's social and ethical impacts and how AI works by shaping how AI systems function. Through hands-on exploration in an education context, students examine how data, design choices, and model behavior influence the fairness, usefulness, and impact of AI systems. The goal is not to develop commercial products or put them into service, but to build the confidence and capacity to shape AI for human good by understanding the principles underpinning the design and behavior of AI from an early age.

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Students don't need to be AI engineers to design AI. Even simple, age-appropriate explorations of how AI systems work can spark powerful learning — and help students see they can shape technology, not just be shaped by it.

- Cathy Adams, Professor of Educational Computing, University of Alberta

Designing AI Competences

1 Describe how AI systems can be designed to support a solution to a community problem.

Knowledge: K2.3, K3.2 **Skills:** Collaboration, Problem Solving, Self and Social Awareness **Attitudes:** Curious, Innovative Responsible

Learners explore how AI can solve real-world problems by identifying a community need that could be addressed with AI, considering how to design AI to contribute to a solution, and evaluating the potential benefits, risks, and limitations.

Primary Education Scenario

Develop a method for sorting healthy vs. unhealthy snacks for the school cafeteria by gathering images of real snack items from home or the cafeteria, labeling them, and testing how the method classifies new items.

Secondary Education Scenario

Propose how AI could help recommend after-school activities based on interests by exploring what data would be needed, how the AI would make decisions, and what parts of the solution should involve human input.

2 Compare the capabilities and limitations of AI systems that follow algorithms created by humans with those that make predictions based on data.

Knowledge: K1.2, K1.4 **Skills:** Computational Thinking, Problem Solving **Attitudes:** Curious

Learners examine the difference between systems that follow fixed rules (or manually programmed logic) and machine learning models to understand the value of machine learning and determine when each approach is most useful or appropriate.

Primary Education Scenario

Compare a method for organizing animals based on physical characteristics with one that groups animals based on habitat and behavior, then discuss when each approach is useful.

Secondary Education Scenario

Program a simple chatbot using conditional logic (e.g., to help people select a book), and compare its capabilities to those of a machine learning–based system handling the same task.

3 Collect and curate data that could be used to train an AI model by considering relevance, representation, and potential impact.

Knowledge: K1.2, K2.2, K2.4 **Skills:** Computational Thinking, Self and Social Awareness **Attitudes:** Innovative, Responsible

Learners discover how data is labeled, selected, and prepared to train an AI model. They learn how data quality and representation affect the model's performance and potential effect on people.

Primary Education Scenario

Label and sort building blocks based on specific features (e.g., shape, color), then create a decision tree to categorize new blocks.

Secondary Education Scenario

Explore how a basic AI model can be trained to recognize recyclable materials from photos taken in real life or collected online, then describe the impact the data had on the model's performance.

4 Evaluate AI systems using defined criteria, expected outcomes, and user feedback.

Knowledge: K1.2, K2.3 **Skills:** Collaboration, Computational Thinking **Attitudes:** Innovative, Adaptable

Learners set criteria for a successful AI system, test it with various inputs, and evaluate its performance to make improvements. They use an iterative process shaped by feedback from diverse users.

Primary Education Scenario

Use a generative AI tool to create a joke or riddle by defining what makes a good joke, rating the system's responses, and trying new prompts to improve results.

Secondary Education Scenario

Evaluate AI systems by testing different types of AI models with the same datasets for the same task, then discuss and propose ways to improve them that includes user feedback.

5 Describe an AI model's purpose, intended users, and its limitations.

Knowledge: K1.2, K2.1 **Skills:** Communication, Problem Solving, Self and Social Awareness **Attitudes:** Curious, Responsible

Learners describe the purpose of an AI model, the data used to train it, and what it can or cannot do well. They help others develop a realistic understanding of the model's capabilities and limitations.

Primary Education Scenario

Direct a classmate, who is role-playing as a robot, to sort snacks or animals by color, size, or shape, and observe how changing the rules creates confusion.

Secondary Education Scenario

Create a model card (brief, structured document) to summarize how a machine learning model works, its training data, intended uses, and possible limitations.

06

What's Coming Next?

During the review period, a public online survey, as well as a series of focus groups and stakeholder discussions, will be conducted to gather feedback on the draft framework. These sessions will engage policymakers, teachers, educators, school leaders, NGO representatives, academics, and other relevant stakeholders. Consultations will also take place at the European Commission's Digital Education Stakeholder Forum and through the European Digital Education Hub. Blogs, webinars, and announcements will be shared by the European Commission, OECD, and Code.org throughout the process.

The final version of the framework will reflect international input and will be published in 2026, alongside a limited set of AI literacy exemplars.

Over the next few months, we invite feedback from stakeholders worldwide. To provide feedback, visit teachai.org/ailiteracy/review.

Click to Review

Use AI to Explore the AILit Framework!

Click for Prompt

A large language model (LLM) is an AI model specialized for tasks like natural language processing, text generation, and translation. A prompt is a carefully crafted set of directions for an LLM-based chatbot and can be used to help explore a document, ask critical questions, and reflect on the content. Follow the directions to explore the AILit Framework using an LLM-based chatbot:

Navigate to the sample prompt via the button above or visit teachai.org/ailiteracy/prompt. On this page, you will find the prompt text along with step-by-step instructions.

- Click the "Copy the Prompt" button to copy the prompt.
- Paste the prompt text into the chat interface.
- After pasting the prompt, upload the PDF of the AILit Framework into the chatbot.
- Finally, interact with the chatbot by asking it questions and following the guidance to explore AILit Framework.

Within the inherent limitations of an LLM, this prompt and these directions are designed to create accurate, document-based responses that include exact quotations with proper citations. Please use the chatbot in accordance with all relevant guidelines.

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Empowering Learners for the Age of AI

An AI Literacy Framework for Primary and Secondary Education

REVIEW DRAFT (May 2025)

European Commission

OECD
BETTER POLICIES FOR BETTER LIVES

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Alaska's Strategic Framework

Artificial Intelligence for K-12

Recommendations and Considerations for Districts

Vision Statement

To empower every Alaskan student and educator to ethically and effectively engage with Artificial Intelligence, fostering critical thinking, creativity, and responsible digital citizenship, thereby providing all learners with the opportunity and comprehensive support to thrive in an evolving, AI-driven world.

Alaska AI K12 Advisory Group

The purpose of this advisory group is to provide advice and support to the Division of Innovation and Education Excellence as they develop the AK Strategic Framework for Artificial Intelligence in K-12. Direction and resources are the outcomes from this workgroup. Your time and service are deeply appreciated.

Name	Position	Organization
Anthony White	CS Content Specialist	AKDEED
Bill Burr	Director of Technology	AGSD
Katie Oliver	Associate Executive Director	AASB
Masoumeh Heidari Kapourchali, Ph.D.	Assistant Professor	UAA College of Engineering
Matthew Calhoun, Ph.D.	Executive Director	ANSEP
Nicole Fuerst	KDLP Coordinator	KIBSD
Walter Barnes	Technology Supervisor	KIBSD

Artificial Intelligence + Education

Artificial Intelligence (AI) refers to machine-based systems capable of making predictions, recommendations, or decisions that influence real or virtual environments for a given set of human-defined objectives. These systems can perform tasks that typically require human intelligence, such as learning, problem-solving, decision making, and receptive and expressive language.

Within the realm of AI, Generative Artificial Intelligence (GenAI) has rapidly emerged as a transformative technology. GenAI is a broad category of AI models that can generate novel content, including text, images, audio, video, and code, in response to user prompts.

Large Language Models (LLMs) are a powerful type of GenAI, and many of the most accessible and widely used applications, such as chatbots like ChatGPT, Microsoft CoPilot, and Google Gemini, are powered by them. These tools are increasingly integrated into various aspects of daily life, including education.

Popular AI Chatbots

ChatGPT | *Microsoft CoPilot* | *Google Gemini* | *Claude by Anthropic* | *Perplexity AI*

The Cognitive Industrial Revolution

"AI [is] affecting everything we do that uses language - be it communication, reasoning, analysis, selling, marketing, support, and services. And what makes it even bolder than the Industrial Revolution or the printing press is obviously the speed at which it will be moving…"

-Reid Hoffman, LinkedIn co-founder

AI tools are rapidly transforming various sectors, and education is no exception. From streamlining administrative tasks to offering personalized learning experiences and reimagining instructional methods, AI presents a spectrum of possibilities. This framework acknowledges the profound impact of AI on the modern workforce, where proficiency in ethical and effective AI engagement is becoming a fundamental skill. By fostering critical thinking, creativity, and responsible digital citizenship through AI education, Alaska aims to prepare its students to thrive in an evolving AI-driven world.

Purpose and Scope

This framework provides comprehensive guidance on the appropriate and responsible integration of Artificial Intelligence (AI) tools, particularly Generative Artificial Intelligence, within Alaska's K-12 education system. It is designed to serve as a flexible resource for school boards, administrators, educators, and students, offering recommendations and considerations rather than strict mandates.

The overarching principle is that AI should serve to **augment human capabilities**, **critical thinking**, and **creativity**, never replacing essential human interaction, judgment or decision making in educational contexts. A balanced and informed approach to advancement of AI is preferred, as an outright ban impedes skill and career development, while unrestricted access falls short of needed protections.

This framework aims to foster innovation, enhance learning outcomes, and safeguard student well-being and data privacy, ultimately contributing to the state's overarching goal of providing ***an excellent education for every student every day***.

This guidance applies to all students, teachers, staff, administrators, and third parties who develop, implement, or interact with AI technologies used in Alaska's education system, where permitted by local and state policy. It covers all current AI systems used for education and administration, including, but not limited to, generative AI models, intelligent tutoring systems, conversational agents, automation software, and analytics tools.

This framework complements existing local policies on technology use, data protection, academic integrity, and student support.

How to Use this Framework

This framework is designed as a strategic and ever-evolving guide for Alaska's educational partners.

- School Boards can use the Guiding Principles to inform policy development.
- District Administrators can use the key areas of focus to direct implementation and professional development.
- Educators can use this document to inform their classroom practices and pedagogical approach to AI.

Guiding Principles for AI Integration

Human-Centered

AI must augment human capabilities, critical thinking, and creativity, never replacing human judgment or decision-making in educational contexts. All AI use should begin with human inquiry and culminate in human reflection and insight.

Fair Access

AI tools and education should be accessible to all students, actively mitigating broadband disparities and device availability challenges across Alaska's diverse regions.

Transparency

The functionalities, limitations, and potential biases of AI tools must be clearly communicated to all stakeholders. Explicit disclosure is suggested when AI is used in educational materials or assessments.

Oversight

Clear lines of responsibility for AI tool selection and outcomes are vital. Robust human oversight is mandatory for any decisions that directly impact students, such as grading or disciplinary actions.

Security

Rigorous protection of student data and digital well-being is non-negotiable. This includes protocols against unauthorized sharing of Personally Identifiable Information (PII) and compliance with local, state, and federal laws.

Ethical Use

Promote responsible and ethical engagement with AI, fostering an understanding of intellectual property rights, preventing misuse, and building critical evaluation skills for all AI-generated content.

Cultural Responsiveness

AI tools should be critically evaluated and used to affirm, rather than diminish, the diverse cultures of Alaska. Proactive measures must be taken to mitigate algorithmic biases and prevent misinterpretation, misappropriation, or the exclusion of crucial local context.

Human-Centered

AI must augment human capabilities, critical thinking, and creativity, never replacing human judgment or decision-making in educational contexts. All AI use should begin with human inquiry and culminate in human reflection and insight. A human-centered approach ensures that technology serves educational goals, empowering individuals rather than overpowering them.

Approach to Generative AI

Districts should move beyond outright bans and instead develop a balanced approach that allows for responsible implementation of generative AI tools.

Empowering Educators

Educators must have the autonomy to make professional decisions regarding AI use in their classrooms. Districts should support educators in updating syllabi and classroom policies to include AI integrity guidelines.

Rethinking Education

AI should be leveraged to enhance problem-solving, innovative design, and creative expression, aligning with existing Digital Literacy Standards.

Research and Evidence Base

Districts should engage in ongoing research and evaluation of AI initiatives. While robust, large-scale independent evidence on AI's effectiveness in education is still limited, districts should continuously evaluate the impact of AI tools and methodologies. This includes assessing student engagement, motivation, cognition, and deep learning, as well as AI's impact on educator roles and professional development.

"The future of AI lies not in machines that think like humans but in creating systems where human and machine intelligence work together in ways that enhance our collective capacity to address the complex challenges we face as a society."

-Luis Gonzalez, Symbiotic AI: The Future of Human-AI Collaboration (2025)

Principles into Practice

To put these human-centered principles into action, our resource website provides tailored support for every role. Find policy roadmaps for leaders, classroom strategies for educators, and responsible use guides for students to help build a safe, equitable, and effective AI ecosystem.

Fair Access

AI tools and education should be accessible to all students, actively mitigating broadband disparities and device availability challenges across Alaska's diverse regions. Ensuring fair access is fundamental to preventing a new digital divide and promoting equity for all learners, regardless of their location or background.

Addressing the Digital Divide

Districts should acknowledge and actively work to mitigate the digital divide, particularly concerning equitable broadband access and device availability in Alaska's diverse and often remote regions. AI tools inherently demand substantial and reliable internet connectivity.

Student Access to Technology Data

Districts should actively seek and analyze current data regarding student access to technology and home internet connectivity to ensure AI integration strategies are evidence-based. Note a 2023 DEED survey to determine student device access and internet connectivity

Procurement and Funding

Districts should strategically leverage state and federal funding opportunities that include the option to purchase digital instructional materials and provide professional development.

AI Literacy for All

It is imperative that all schools and districts develop and implement an AI Literacy program that provides all staff and students with an understanding of this powerful technology. Access to education and training is as critical as access to the tools themselves. This includes:

- An understanding of basic AI principles and applications.
- The skills to recognize when AI is employed and an awareness of its limits.
- Knowledge of ethical and responsible AI use, including topics of safety, bias, and disinformation

Resources for Educators

ISTE | AI in Education

TEACHAI | AI Literacy

Resources for Students

Common Sense Media | AI Literacy

MIT | Day of AI

Transparency

The functionalities, limitations, and potential biases of AI tools must be clearly communicated to all stakeholders. Explicit disclosure is suggested when AI is used in educational materials or assessments. Transparency builds trust and empowers users to be critical consumers of AI-generated content.

Rethinking Plagiarism and Academic Integrity

Policies should clarify how to appropriately attribute AI-generated content and require students to disclose when and how AI was utilized in their work. This includes requiring students to cite AI-generated content appropriately.

Data Governance

Districts should carefully review AI vendors to ensure tools meet rigorous privacy and security standards before adoption. This includes ensuring vendors provide clear privacy and compliance documentation for review.

Addressing Bias and Misinformation

AI systems can unintentionally amplify bias or produce misleading outputs. To ensure transparency, districts must help staff and students evaluate AI critically by training them to identify bias, misinformation, and "hallucinations". Learn more about bias and the ethics of generative artificial intelligence.

Communication Strategy

Districts should develop a clear communication plan for disseminating AI guidelines to all stakeholders, transparently outlining benefits, safety measures, privacy protocols, and data management procedures.

Sample District Board Policy
Provides the foundational, board-approved guidelines for AI integration, ensuring a clear and official framework for the entire district.

Academic Integrity Guidelines
A detailed guide for educators and students on how to ethically use and properly cite AI in assignments, promoting honesty and clear standards in the classroom.

School Handbook Language
Offers adaptable language for school handbooks, translating district policy into clear, actionable expectations for students and families.

Family & Community AI FAQ
A ready-to-use FAQ template that addresses common questions from parents and community members about AI in schools, helping to build trust through open communication.

Oversight

Clear lines of responsibility for AI tool selection and outcomes are vital. Robust human oversight is mandatory for any decisions that directly impact students, such as grading or disciplinary actions. While AI can offer powerful support, humans remain accountable for student learning and well-being. This principle ensures that technology is used as a tool to inform, not replace, professional judgment for impactful student matters.

Evaluating, Procuring, and Scaling AI EdTech Tools

Districts should form a dedicated team to evaluate AI tools and their effectiveness in supporting teaching and learning. A key evaluation criterion must be the level of human oversight the tool requires and allows, ensuring that educators remain in control of impactful decisions.

District-Wide Guidelines

Accountability begins with clear expectations. Districts must develop clear, district-wide guidelines detailing the acceptable and responsible use of generative AI by all stakeholders. These policies establish the standards to which everyone in the educational community is held accountable.

Vendor Accountability and Review

Accountability extends to the partners and vendors who provide AI tools. Districts should carefully review AI vendors to ensure tools meet rigorous privacy and security standards before they are adopted for classroom use.

Empowering Educators

Districts should provide teachers with the autonomy and support needed to make professional decisions about AI use in their classrooms. This autonomy is directly linked to professional accountability, trusting educators to implement AI in ways that are pedagogically sound and in the best interest of their students.

AI Policies Across Alaska

Fairbanks – Board Policy | AI Resource Page
Mat-Su – Responsible Use Policies
Wrangell – Academic Honesty
Anchorage – Dimond HS Student Handbook

Security

Rigorous protection of student data and digital well-being is non-negotiable. This includes protocols against unauthorized sharing of Personally Identifiable Information (PII) and compliance with local, state, and federal laws. The integration of AI introduces new opportunities and potential vulnerabilities. A proactive and robust security posture is essential to protect student data, maintain the integrity of district systems, and build trust within the community.

Cybersecurity

Districts must prioritize cybersecurity to protect computer systems and networks from information disclosure, theft, or damage to data, and disruption of services. This demands a strategic approach to building necessary skills for IT managers and establishing security monitoring.

Protecting Personally Identifiable Information (PII)

Users must be taught the importance of protecting data privacy when using generative AI tools. Explicit prohibitions against entering sensitive student data, PII, or confidential information into publicly accessible AI tools are essential.

Compliance with Laws

Districts must ensure that any AI tools procured or used comply rigorously with federal laws such as the Family Educational Rights and Privacy Act (FERPA), and the Children's Internet Protection Act (CIPA).

Vendor Vetting

Districts should establish a robust vetting process for AI tools, requiring schools and districts to review terms of service, privacy policies, and compliance documentation from vendors. Proactive guidance helps ensure that recommended tools adhere to high data privacy and security standards.

Actionable Steps for Districts

Districts should take actionable steps to create a robust security posture for generative AI.

- Review and amend existing data privacy and acceptable use policies to address the unique risks of generative AI.
- Establish simple "Do's and Don'ts" for daily AI use, such as using anonymized data in prompts and never uploading documents containing confidential school or district information.

Ethical Use

Promote responsible and ethical engagement with AI, fostering an understanding of intellectual property rights, preventing misuse, and building critical evaluation skills for all AI-generated content. Ethical use of AI goes beyond policy to instill a culture of responsibility in every user. It requires fostering an understanding of digital citizenship, preventing misuse, and empowering students and staff to critically evaluate both the AI tools and the content they produce

Rethinking Plagiarism and Academic Integrity

Ethical use begins with honesty about how AI tools are used. Policies must clarify how to appropriately attribute AI-generated content and require students to disclose when and how AI was utilized in their work. Submitting AI-generated work as original without proper citation is considered plagiarism. Districts can utilize an AI Acceptable Use Scale to build clear expectations for AI use on specific assignments.

Comprehensive Training Strategy

A culture of ethical use is built through education. Districts should develop a comprehensive training strategy covering ethical and responsible AI use, including data privacy and academic integrity. Training should also include information about safety, bias, fake content, disinformation, and malicious use to equip users with the skills to navigate AI safely and ethically.

AI Limitations

Ethical use requires a critical awareness of an AI model's limitations. AI models can inherit biases from their training data, leading to inaccurate, misleading, or discriminatory outputs. Districts should empower all users to ethically engage with AI by teaching them to identify, question, and compensate for biases and misinformation in AI outputs.

Effective Prompting

Part of using AI ethically is using it responsibly. Frameworks like EVERY (Evaluated, Verify, Edit, Revise, You are responsible) or PREP (Prompt, Role, Explicit Information, Parameters) can guide responsible and effective AI use, reinforcing that the user is ultimately accountable for the final product.

Learn More

- Ethical AI for Teaching and Learning | Cornell University
- Education and AI | Center for Technology Innovation at Brookings
- Ethics and AI | Association of California School Administrators

Cultural Responsiveness

AI tools should be critically evaluated and used to affirm, rather than diminish, the diverse cultures of Alaska. Proactive measures must be taken to mitigate algorithmic biases and prevent misinterpretation, misappropriation, or the exclusion of crucial local context. Technology is not culturally neutral. To serve all of Alaska's students, AI tools must be implemented in ways that respect and reflect the rich diversity of the state's communities, languages, and histories, aligning with the Alaska Standards for Culturally Responsive Schools.

Addressing Bias and Misinformation

AI models can inherit biases from their training data (racial, cultural, gender, political), leading to inaccurate, misleading, or discriminatory outputs. Districts should empower all users to identify, question, and compensate for biases and misinformation in AI outputs, while continuing to advocate for the development and adoption of more culturally responsive and equitable AI tools.

Stakeholder Engagement

To ensure AI guidelines are culturally responsive, districts should involve diverse stakeholders, including educators, students, parents/caregivers, administrators, elders, and community members in their development and ongoing review. This collaboration ensures that local knowledge and cultural values are integral to the implementation process.

Rethinking Education

AI can support a shift towards student-driven personalized learning that focuses on developing each student's learning needs rather than a one-size-fits-all approach. This provides an opportunity to create learning experiences that are more relevant and affirming by integrating students' cultural backgrounds, languages, and experiences.

District-Wide Guidelines

When developing district-wide guidelines, a key consideration must be how AI can support students with diverse learning needs. Policies should be designed to ensure that AI tools are used to create inclusive learning environments that value and accommodate every student's unique background and identity.

AI Use Disclaimer

This policy document was drafted with the assistance of artificial intelligence and generative models, including Gemini and ChatGPT, while noting that the provided sources generally refer to Large Language Models (LLMs) in the crafting of such guidance. Aligned with a foundational human-centered approach, which dictates that AI tools should augment rather than replace human capabilities, its development prioritized extensive human oversight, critical reflection, and human judgment. This approach aims to model responsible and ethical engagement with AI technologies, leveraging them as augmentation tools that preserve and enhance human insight, creativity, and decision making in education, emphasizing that human judgment remains the ultimate arbiter in student-centered matters

Definitions

Academic Integrity: The commitment to core values of honesty, trust, fairness, respect, and responsibility in all academic pursuits.

AI Literacy: The comprehensive knowledge and skills that enable individuals to critically understand, use, and evaluate AI systems and tools, including their capabilities, limitations, and ethical implications.

Algorithmic Bias: Systematic and repeatable errors in an AI system that create unfair or discriminatory outcomes, often stemming from biases in the data used to train the AI or the design of the algorithm itself.

Artificial Intelligence (AI): Machine-based systems capable of making predictions, recommendations, or decisions influencing real or digital environments.

Authorized AI Use: The use of AI tools in ways that align with district policies, classroom expectations, and applicable laws.

Chatbots: Online software applications or web interfaces that use generative artificial intelligence systems capable of maintaining conversations with a user in natural language by simulating the way a human would behave as a conversational partner.

Conversational Agents: Conversational agents leverage Natural Language Processing (NLP) and Artificial Intelligence (AI) to interact with users through text or voice.

Culturally Responsive: Educational practices or tools that recognize, value, and integrate students' cultural backgrounds, languages, and experiences into the learning process to make education more relevant and effective for diverse learners.

Deepfake Technology: Digital alteration or fabrication of images, videos, or audio to misrepresent reality.

Digital Citizenship: The understanding of appropriate, responsible, and ethical behavior when using technology and engaging in online environments, encompassing digital literacy, safety, and etiquette.

Digital Divide: The gap in access to and proficiency with information and communication technologies, particularly concerning internet connectivity and device availability, often correlated with socioeconomic status, geographic location, or other demographic factors.

Generative AI (GenAI): The class of AI models, often known as chatbots, that emulate the structure and characteristics of input data to generate derived novel content, including text, images, audio, video, and code.

Hallucinations: A phenomenon where an AI model, particularly large language models (LLMs) or generative AI tools, produces outputs that are nonsensical, inaccurate, or not based on the training data. This can occur in various AI applications, including chatbots, computer vision tools, and natural language processing systems.

Intelligent Tutoring Systems: Computer-based educational tools that leverage artificial intelligence to provide personalized instruction and support tailored to individual learners' needs.

Large Language Models (LLM): Neural networks trained on large datasets to understand and produce human language, leveraging advanced architectures, such as Transformers, to process and generate text, capturing intricate patterns and nuances in languages.

Misinformation: False or inaccurate information that is spread, regardless of intent. (Often contrasted with "disinformation" which implies intent to deceive.)

Personally Identifiable Information (PII): Information that directly or indirectly identifies an individual (e.g., name, student ID, address).

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FullScale

AI in Rural Schools

What We're Seeing in Practice

Contents

About FullScale

We unite education leaders and organizations together to drive collective learning, action, and systems transformation. We break silos, bridge divides, lift up new evidence and unseen innovations, and accelerate change for lasting impact for every learner.

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Introduction

For a field seeking to understand how AI adoption translates into meaningful instructional change, rural systems offer a critical vantage point. In these systems, which serve over 40% of students in the United States, close relationships, few bureaucratic layers between decision and practice, compressed roles, and strong community alignment allow new approaches to move quickly across classrooms and schools.

Together, these conditions keep decisions, supports, and implementation tightly coupled, reducing the space for diffusion or delay, making it easier to understand where innovation succeeds and scales, or breaks down. In this way, rural systems function as "compressed laboratories," in which the interactions between decisions, context, and implementation become visible in real time.

Despite the potential for the broader field to learn from rural settings, it is not yet organized to do so at scale. As a result, many conversations shaping AI's future in K–12 education either exclude the perspectives of these schools and systems entirely, or treat them as downstream recipients of approaches developed elsewhere. In doing so, they overlook both the local realities of rural systems and the meaningful innovation already underway within them.

In early 2026, FullScale conducted a national field scan as part of its Rural AI Strategy Lab to better understand how rural schools and districts approach AI. This brief draws on four sources of evidence:

- A scan of publicly available documents from 241 rural schools and districts across 12 states;
- 22 interviews with national, state, intermediary, and local leaders working at the intersection of rural education and AI;
- Applications from 114 teams to participate in FullScale's Rural AI Strategy Lab from schools and districts across 34 states; and
- In-depth interviews with 33 finalist teams.

The findings that follow present a snapshot of how rural schools and districts apply AI, the conditions shaping its use, and considerations for the broader field.

A Note on Digital Access in Rural AI Adoption

Conversations about rural education and technology have long centered on connectivity, including whether students have devices, schools have broadband, and the infrastructure needed for powerful digital learning exists. This framing has been, and continues to be, important for many rural communities working to close those gaps. Of the 114 applications we received, 24% mention broadband access, internet infrastructure, or device availability, and several describe home internet gaps that continue to shape what students can access outside of school hours. **The work of closing technology access divides is not finished.**

At the same time, **framing rural AI adoption primarily as an access problem is increasingly incomplete.** Among the 24% of applications that mention connectivity challenges, many describe infrastructure that they have already built, including 1:1 device environments, Chromebook deployments, and upgraded school networks, often accelerated through COVID-era investments. These schools and systems are ready to move beyond the focus on connectivity to build the systems and skills to powerfully use technology, including AI. As one leader in Utah put it, *"Every student has a Chromebook and access to good internet. What we lack is the specific education to leverage emerging technologies."*

The field must continue to address connectivity gaps where they persist, while also accelerating support for educators who are ready to use technology in powerful ways. Recognizing this, this brief focuses on the latter, sharing what we are learning about how rural systems are using AI in practice and what it takes to support meaningful, sustained use.

Current Applications of AI in Rural K-12 Settings

Through our research, we discovered that AI use in rural schools and districts is not defined by a single entry point or unified strategy. Instead, it is emerging through a range of applications shaped by local priorities, available capacity, and immediate instructional and operational needs. In many cases, AI is not introduced as a standalone initiative, but as a tool layered into existing work, supporting planning, communication, and student learning in ways that align with current responsibilities.

At the same time, patterns across the landscape suggest that these uses are not random. Educators consistently point to a set of opportunities that AI makes more accessible, and early use reflects how systems are beginning to act on those instructional priorities within existing system conditions.

How AI is Driving Opportunities

In rural schools and districts, AI use is best understood not through tools or programs, but the opportunities educators seek to unlock for their students. Across applications, interviews, and early cohort engagement in our Strategy Lab, three clear opportunity areas emerged:

- Expanding student access;
- Recovering and extending capacity; and
- Preparing students for economic and civic life.

Expanding Student Access

For many rural educators, AI is first and foremost about expanding what students can access. Distance, staffing, and limited program availability often define the boundaries of opportunity. They are exploring AI as a way to push beyond those boundaries, opening up access to advanced coursework, personalized academic support, and exposure to future pathways that might otherwise be out of reach.

> **From the Data on Digital Access in Rural AI Adoption**
>
> Of the 114 applications received, 66% reference equity, access, or underserved students. Across the 33 finalist teams, expanding access is repeatedly identified as a central driver of early efforts.

As one rural school leader put it, *"Why not our kids?" Another elaborated to describe AI as a way to unlock "personalized tutoring, career exposure, and advanced resources previously not possible because of geography."* Across these examples, and others like them, AI is framed as an opportunity to extend what is possible for students within their existing community.

Recovering and Extending Capacity

For many rural educators, AI is also about sustaining and extending what their teams are able to accomplish. In small systems, limited staffing and overlapping roles often mean that core responsibilities are distributed across a small number of people. Across rural contexts, teachers, and school and system leaders are exploring AI as a way to stabilize workload, protect time for instruction, and extend the reach of existing staff without requiring additional hires.

> **From the Data**
>
> 54% of the 114 applications referenced time, capacity, or workload, and 44% explicitly named staffing constraints or role compression as challenges for AI to solve. In interviews, these conditions were consistently described as defining features of rural systems.
>
> "We're a small district where everyone wears many hats. AI has the potential to help us do more for our students without burning out our staff," -District leader

Preparing for Economic & Civic Life

For many rural educators, AI is also about ensuring that students are prepared for the realities of a rapidly changing economy. In communities where schools play a central role in connecting students to local workforce pathways, shifts in industry are often felt quickly. AI serves as both a signal of these changes and a tool to help students build the skills and awareness needed to navigate them.

> **From the Data**
>
> Across the 114 applications, 57% reference CTE or economic readiness, and 81% point more broadly to career or workforce opportunity.

Among the 33 finalist teams, career-connected learning emerged as a common focus of early AI implementation. Across these systems, a clear tension is emerging: AI is being understood simultaneously as a potential driver of new inequities and as a powerful opportunity to better align learning with rapidly evolving industries.

"If we don't prepare students now, we risk leaving an entire generation unprepared," one district leader noted, reflecting a concern that without intentional action, students may fall further behind as AI reshapes the workforce.

At the same time, another shared, *"Our CTE teachers saw immediately this was going to reshape the industries our students were preparing for,"* highlighting how some educators, particularly those focused on career-connected learning, are moving quickly to adapt instruction in response.

How AI is Showing Up in Practice

To address the priorities described above—expanding student access, recovering and extending capacity, and preparing for economic and civic life—we observed a number of different implementations. At this early stage, AI use is emerging within three domains or workflows within existing systems: non-instructional or operational, instructional or teacher-facing, and direct student-facing uses.

Non-Instructional, Operational, or Administrative Workflows

In many rural systems, AI is entering through administrative and operational workflows. These uses offer immediate, visible value and are often easier to implement within existing structures.

This pattern is widespread:

- 74% of applicants reported some level of engagement with AI for administrative or time-saving tasks, and
- 33% are actively piloting these various administrative uses.

Among finalist teams, operational workflows surfaced as the most common focus for future pilots. One regional leader shared that "*Bus route analysis could be done with AI. That's hours back in a week.*" Another noted, "*We want an AI agent in Zendesk to help us solve our own IT problems first.*"

Instructional Workflows

Across rural systems, educators are using AI to support planning, preparation, and instructional design. A large majority of applicants (85%) describe some level of engagement with AI for instructional planning, though only 32% are actively piloting these uses, suggesting that much of this use remains exploratory with limited visibility into how deeply these tools are shaping instructional practice or outcomes. *"Teacher tools are dominant here—MagicSchool, Gemini, Brisk, NotebookLM. Student use is still rare,"* one state leader noted. Others pointed to uneven depth of use. For example, "*Teachers are using AI for lesson planning but not optimizing it—we don't know how much depth is actually there.*"

Direct Student-Facing Uses

Across rural systems, direct student-facing use of AI seems to be emerging more gradually. It is less often the starting point and more often a next step.

While 84% of applicants report exploring or piloting student-facing use, only 24% are actively piloting. Likewise, 8 of 33 finalist teams report current implementation of student-facing tools. In interviews, this work is consistently described as intentional and staged. *"We want to give students real-world AI experience, but we're opening access carefully,"* one district leader shared. Another noted, *"The problem isn't that students are using AI—it's how we teach them to use it in ways that build their skills."* Educators also point toward a longer-term goal: using AI not just to build skills, but to enable more applied, relevant learning experiences that reflect how these tools are used in real-world contexts.

Where Gaps Are Emerging

The distance between the three ways that AI has started driving opportunities and the three workflows associated with current use reflects how systems work to navigate implementation in real time. Across the applications and interviews, three gaps emerged as potential limiters of what could be possible:

- Policy and guidance;
- Professional learning systems; and
- The tool and provider landscape.

Policy & Guidance

Across rural systems, governance and policy are developing alongside implementation. Interviews suggest that many systems are moving forward while still developing shared expectations. "We don't have a playbook, but the work is already happening and we're having to figure it out as we go," one superintendent shared. Of the 114 applications received, 35% reference governance or policy, indicating a growing need for guidance.

> ***"We don't have a playbook, but the work is already happening and we're having to figure it out as we go,"***
>
> **-SUPERINTENDENT**

This gap helps explain the difference between the opportunities educators describe and the uses currently in place. While leaders point to more advanced, student-centered applications of AI, many systems are deploying AI for readily available, lower-risk uses, such as lesson planning, content generation, and other teacher-facing workflows, rather than more complex student-facing or instructional redesign efforts. In the absence of clear guidance, policies, and protections, educators often default to tools and applications that feel safe, familiar, and easier to implement.

Professional Learning Systems

Evidence from applications and interviews suggests that professional learning structures are widely present but not yet aligned to support deep AI integration. 62% of applicants reference professional learning, and interviews suggest that experimentation is often outpacing structured support. In many systems, professional learning takes the form of one-time sessions, introductory training, or informal sharing among educators rather than sustained, practice-embedded support. As one district leader explained, *"It's hard to run PD when the tools change every week."*

> *"It's hard to run PD when the tools change every week"*
>
> -DISTRICT LEADER

This pattern limits how deeply educators can integrate AI into instructional practice. Without ongoing, coherent support, educators are less likely to move beyond early experimentation into more complex or sustained use.

Tool & Provider Landscape

Across applications and interviews, a small number of educator-facing AI tools appear repeatedly, suggesting that adoption is concentrated among a limited set of highly visible platforms. Tools such as MagicSchool are frequently named, while many other tools are mentioned infrequently or not at all. As one school leader shared, *"There are so many tools out there—we'd need help knowing what to choose."* This reflects a broader challenge: navigating a rapidly expanding but uneven landscape of tools without clear guidance on quality, fit, or use.

> *"There are so many tools out there—we'd need help knowing what to choose."*
>
> -SCHOOL LEADER

This pattern shapes how systems select and use AI tools in practice. While the number of available AI tools continues to expand rapidly, adoption is shaped less by the full range of options and more by what is most visible, accessible, and already in use across peer systems. In this context, decision-making often begins with the tool rather than the problem, with systems adopting what is readily available instead of identifying and selecting tools aligned to specific instructional or operational needs.

Connecting Opportunities, Use, and Gaps

Taken together, a consistent pattern has surfaced across the research. Rural educators are clear about what they want AI to enable: expanded access, sustained capacity, and preparation for evolving economic realities. Early use reflects what is most immediately actionable, with adoption clustering in administrative workflows and teacher-facing tools. The distance between these priorities and current use is shaped less by interest than by system conditions, including policy clarity, professional learning structures, and access to clear guidance on selecting and implementing tools from an increasingly crowded and uneven landscape.

The table below synthesizes our findings and illustrates how the driving opportunities are translating into early AI use across instructional and operational contexts. These relationships are not linear; each opportunity appears across multiple domains of use and is shaped by overlapping system conditions.

Table 1. Connecting Opportunities, Emerging Uses, and Gaps in Rural AI Adoption

DRIVING OPPORTUNITY	WHAT THIS MAKES POSSIBLE AT SCALE	WHERE AI IS SHOWING UP TODAY	WHAT IS SHAPING WHAT'S POSSIBLE RIGHT NOW
Expanding Access	Students access advanced coursework, personalized support, and career pathways regardless of geography or staffing constraints	Appears across all three domains: instructional workflows (differentiation, lesson design), non-instructional workflows (freeing time/resources), and emerging student-facing uses (tutoring, exploration tools)	Policy clarity influences student-facing use; tool availability and quality shape what access looks like; professional learning affects how effectively tools are used for differentiation
Recovering and Extending Capacity	Educators have sustained time for instruction, with AI supporting planning, communication, and operations in integrated ways	Most visible in non-instructional workflows (efficiency, operations) and instructional workflows (planning, preparation), with indirect impact on student-facing work	Policy clarity influences student-facing use; tool availability and quality shape what access looks like; professional learning affects how effectively tools are used for differentiation
Preparing for Economic and Civic Life	Students build future-ready skills, explore career pathways, and engage with AI as part of real-world learning	Emerging primarily in student-facing uses (career exploration, skill-building), supported by instructional workflows and occasionally operational infrastructure	Tool landscape gaps are most visible here (especially for student-facing and specialized contexts); policy and professional learning shape how confidently systems move into this space

System-Level Conditions Shaping Rural AI Adoption

The patterns described in previous sections raise a deeper question: why does AI adoption take shape differently across rural systems with some districts moving quickly and coherently, while others take different paths?

Two structural forces consistently shape these differences: coherence and constraint.

These are not opposing forces, but interacting systemic conditions that define how change happens. Rural systems possess structural assets that enable and require alignment, trust, and rapid coordination. At the same time, they operate within long-standing design conditions—staffing structures, role configurations, and resource landscapes—that shape what is possible. Understanding how these forces interact systemically helps explain both the opportunities rural educators are pursuing and how those efforts take shape in practice.

Coherence

Proximity, networks of relationships, and smaller system size shorten the time and distance between leadership decisions and classroom practice. Across 96% of our 114 applications, educators referenced community, relationships, or engagement as central to their work, and more than half pointed to peer networks as a key motivation for engaging in AI. In interviews, 18 of the 33 finalist teams described community trust not as a stakeholder strategy, but as the foundation that allows new efforts to take root.

This coherence shows up in how direction is built and shared. In rural systems, where schools and districts are often smaller in scale, alignment is often developed through ongoing interaction rather than formal processes. Leaders are close enough to classroom practice to observe what is working, validate it, and create shared expectations that allow it to spread. In Pennsylvania, one superintendent described this simply, *"I watch what teachers are doing, I vet it, then we work together."* In Massachusetts, another leader pointed to *"fewer silos"* and more direct coordination between district leadership and classrooms. These structural features enable faster feedback, clearer direction, and more consistent implementation.

Across contexts, we observed a consistent pattern: coherence emerges through relationships, shared direction, and community trust. The balance across these elements varies from one rural community to the next, but together they enable systems to move with clarity and sustain that work over time.

Constraint

The same conditions that enable coherence in rural systems also shape how new work is taken up and sustained. Without extensive external partnership infrastructure or specialized roles, rural districts often build governance, professional learning, and implementation structures in tandem with early use. This can create unevenness, but it also reflects a pattern of integrated system-building rather than sequential rollout. Privacy considerations in small communities, reliance on key individuals, and the need to prioritize carefully all influence how efforts take shape. As one school leader reflected, *"We can do hard things—but the sustainability story here is mostly one person going above and beyond."* The capacity is present, though the challenge is ensuring that it is supported in ways that allow it to extend beyond specific individuals over time.

These patterns are shaped by long-standing design conditions that define how work is organized in rural systems. Across 44% of applications, educators described role compression or staffing structures that require individuals to operate across multiple responsibilities. In interviews, every finalist team named this as a defining feature of their context. *"It's me and my assistant,"* one superintendent explained, describing the scale of central office operations. Another leader pointed to the tension between growing demands and limited staffing capacity, reflecting that gaps in capacity are not temporary, but are structural results of how work is organized and distributed.

Within these conditions, rural systems develop particular strengths. When roles are broader and teams smaller, coordination often happens laterally rather than through layered structures. Field leaders consistently described how they operate with a form of adaptive capacity, including the ability to focus effort, build cross-role alignment, and move quickly when direction is established. As one leader put it, *"smallness enables agility but strains sustainability."* Both are true, and both emerge from the same underlying structure that enables coherence while placing limits on scale and sustainability.

The Intersection of Coherence and Constraint

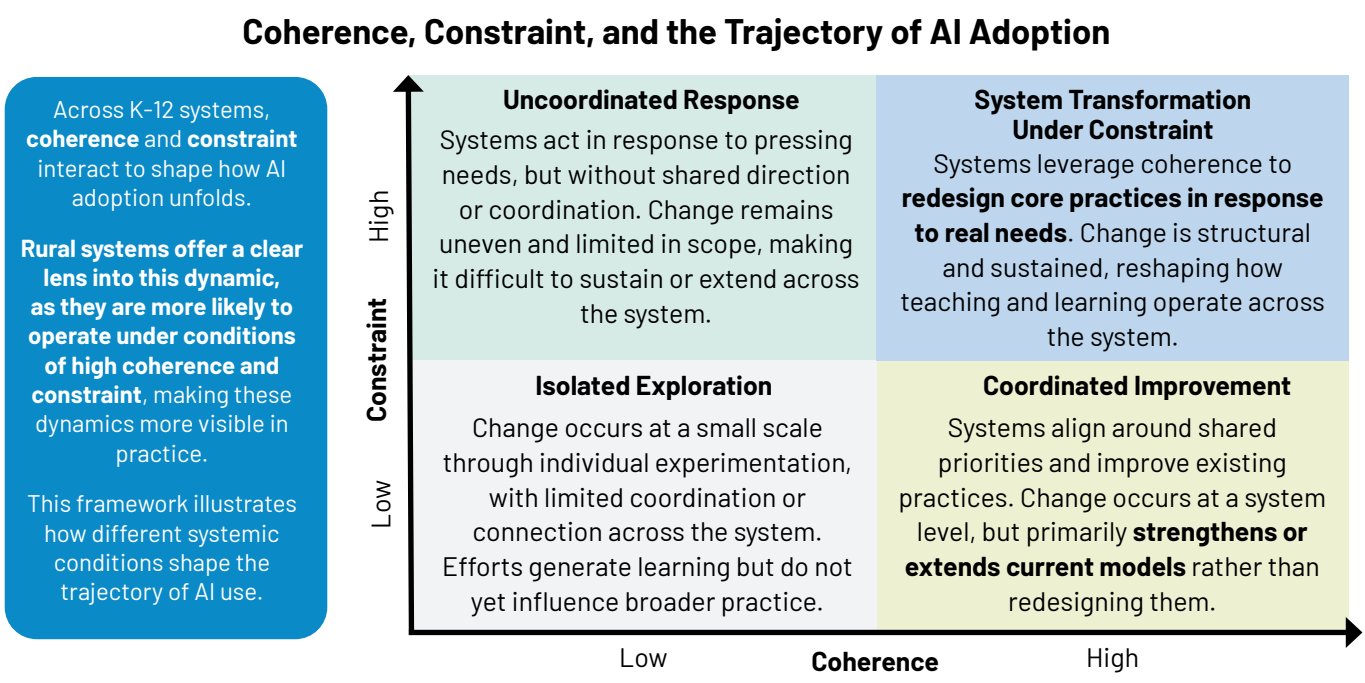
Coherence and constraint interact to shape how AI adoption takes hold within a system, what gets prioritized, how quickly efforts align, and whether early experimentation spreads or stalls. Together, they shape the scale and nature of change that systems are able to achieve. Looking at these conditions together makes visible patterns that are not apparent when each is considered on its own.

Across our research, four distinct conditions emerge. These are not stages or pathways, but different environments in which AI adoption is unfolding, each reflecting a particular combination of alignment and system conditions. In some districts, AI use emerges through isolated experimentation, generating early learning but remaining disconnected from broader system practice. In others, systems respond to pressing needs, but without shared direction, efforts remain uneven and difficult to sustain. Where coherence is stronger, systems are able to align around shared priorities and improve existing practices at a broader scale. In a smaller but critical set of cases, the combination of coherence and constraint makes more fundamental change necessary, enabling systems to redesign core aspects of teaching and learning.

For the field as a whole, these patterns point to an important insight: some of the most instructive examples of AI adoption are emerging, not despite rural conditions, but because of how systems are able to work within them. While this dynamic applies across K–12 systems broadly, rural systems offer a particularly clear lens into how coherence and constraint interact. They are more likely to operate under conditions where alignment is strong and resources are limited, making visible how systems move from isolated experimentation toward coordinated improvement and, in some cases, toward system-level transformation.

The sections that follow describe each of these conditions in turn, illustrating how different combinations of coherence and constraint shape the pathways systems take as they move from exploration to implementation and, ultimately, to transformation.

Image 1. Coherence, Constraint, and the Trajectory of AI Adoption



Interpreting the Matrix in Rural Contexts

The examples in this section are not evenly distributed across all four quadrants. Most of the systems represented in our data demonstrate some degree of coherence, and fewer examples reflect conditions where coherence is largely absent. As a result, the high-coherence quadrants are grounded more directly in reported cases from interviews and applications. These sections reflect patterns we observed consistently across systems.

By contrast, the low-coherence quadrants are less directly represented in the data. In these cases, descriptions reflect partial observations and extrapolated patterns based on early-stage efforts or gaps described by participants. These sections should be understood as hypotheses about how AI adoption may unfold when shared direction is not yet established.

This distribution is itself instructive. It suggests that coherence may be a prerequisite for visible or sustained AI adoption, and that systems without it are less likely to surface in formal initiatives, applications, or documented examples. It also reinforces a central hypothesis of this work: rural systems, by virtue of their structural conditions, are more likely to operate in high-coherence environments, making them critical sites for understanding how AI adoption can move beyond isolated exploration toward coordinated improvement and, in some cases, toward system transformation.

High Constraint / High Coherence — System Transformation Under Constraint

In some rural systems, strong alignment exists alongside constrained staffing and infrastructure. In these contexts, AI adoption is focused, deliberate, and sustained. The work often begins with a clear instructional or community-grounded purpose and evolves into coordinated efforts that reshape practice across the system. Typically, these systems prioritize a small number of use cases and build from early classroom use and small-scale pilots into system-wide implementation over time, allowing early experimentation to inform broader redesign.

This pattern surfaced across interviews and applications, particularly in systems with established routines for collaboration, examples including:

- One district in Tennessee prioritized building AI literacy through PLCs and teacher leadership before introducing tools, resulting in sustained use without ongoing purchasing. This reflects how coherence enables systems to build internal capacity first, creating the foundation for sustained, system-level change without reliance on external resources.
- In Kentucky, a rural district convened a cross-functional AI task force to align policy, instruction, and community expectations over time. This alignment enabled deliberate progress and supported coordinated changes across core system functions despite constrained staffing and infrastructure.
- In Arizona, a geographically large district serving predominantly Indigenous students leveraged existing PLC structures to extend AI-supported practices across its system with a focus on closing learning gaps. This illustrates how building on existing structures supports system-wide scale and enables shifts in instructional practice without adding complexity.

These examples suggest that when coherence is strong, constraint functions as a focusing mechanism that clarifies priorities and concentrates effort, supporting disciplined, system-wide adoption and enabling more fundamental changes to take hold.

Low Constraint / High Coherence — Coordinated Improvement

When schools and systems have greater access to resources or external infrastructure that lower constraint, coherence enables experimentation to translate into system-level learning. Efforts align with instructional priorities and are reinforced through professional learning and policy. In these cases, coherence is often supported through networks, partnerships, or state-level infrastructure that provide shared language, tools, and learning opportunities.

This pattern appeared across the landscape scan, particularly among systems connected to structured networks or coordinated state efforts, including:

- In Wyoming, a majority of rural districts developed AI policy using shared scaffolds such as statewide AI literacy courses, templates, and communities of practice. This reflects how shared infrastructure reduces the burden on individual systems while maintaining alignment.
- In Utah, long-standing investment in statewide infrastructure has enabled systems to align quickly as new challenges emerge. This illustrates how coherence built in advance supports rapid, coordinated response.
- In South Carolina, districts participated in a national network, receiving support to develop shared approaches to AI integration grounded in instructional priorities. This highlights how external networks reinforce coherence and collective learning.

Cumulatively, these examples and others suggest that supporting coherence within systems enables them to better align and extend emerging practices across the system. However, without constraint as a focusing mechanism, systems may be more likely to adopt AI in ways that strengthen and entrench existing approaches, rather than transforming teaching and learning.

High Constraint / Low Coherence — Uncoordinated Response

In other systems, educators and leaders are actively engaging with AI, but shared direction has not yet formed. Efforts are often driven by pressing needs, but remain distributed rather than connected. In these contexts, change is underway, but it is uneven and limited in scope, emerging through individual initiative rather than coordinated system effort.

This pattern surfaced in early-stage efforts described in interviews and applications, though it was less consistently represented than high-coherence contexts, including examples such as:

- Teachers experiment with AI tools for lesson planning and feedback while district guidance is still in development. This reflects how constraint without shared direction can lead to parallel efforts that do not accumulate into broader system change.
- Small groups of educators introduce AI practices within their own classrooms, generating early momentum that remains localized rather than extending across schools or the system. This highlights how early innovation can remain contained without coherence.
- Leaders may return from professional learning energized to act, while still working to define a shared approach for their system. This illustrates how urgency can outpace alignment, resulting in action that is not yet coordinated.

Together, these examples suggest systems in motion, where meaningful activity is underway but has not yet translated into sustained or system-level change.

Low Constraint / Low Coherence — Isolated Exploration

The final set of patterns includes systems where access to tools enables widespread experimentation, but shared direction has not yet taken shape. Educators explore AI in parallel without a common framework to guide or connect their efforts. In these contexts, change occurs through individual or small-group experimentation, with limited connection to broader system priorities or learning. This pattern was less directly represented in interviews and applications, but surfaced through partial observations and early-stage efforts described by participants.

In such systems, tools are available but system-level vision and supports have not yet caught up. For example, this might look like:

- A growing number of AI-related initiatives emerge across schools without a shared definition of effective use. This reflects how access without coherence can lead to fragmentation rather than coordinated progress.
- Rapid experimentation is enabled by access to tools, but leaders struggle to connect those efforts into a coherent strategy. This highlights how access alone does not ensure alignment or shared learning.
- Multiple pilots may be underway, but each operates independently without shared structures for learning or scaling. This illustrates how parallel efforts can limit a system's ability to learn from its own work.

These patterns suggest that access alone does not produce progress without coherence. In these contexts, experimentation remains diffuse until structures for shared direction and learning are established.

Field Actions for Moving Forward

The patterns in this brief reveal that advancing AI in rural systems requires approaches that align with the realities of how local systems actually operate. The work is already underway. The question is how the field chooses to respond.

We have identified three interconnected actions that reflect not only what rural systems need, but how the field can better support and learn from the work already happening:

- Treating rural context as a design condition;
- Investing in the intermediary layer; and
- Making rural innovation visible.

Treat Rural Context as a Design Condition

Rural systems are not edge cases. They represent a significant and diverse portion of the education landscape, serving roughly 40% of students nationwide. Across our landscape scan, rural context was rarely centered in how AI tools, frameworks, or supports were designed, and only a small number of intermediary efforts explicitly focused on rural conditions.

At the same time, rural systems are already developing approaches that reflect their contexts. Across applications and interviews, teams consistently described work shaped by staffing structures, geographic realities, and community priorities. These are not constraints to work around. They are inputs to design with.

This points to a shift in how the field approaches innovation. **Rather than adapting solutions developed elsewhere, design should begin with the realities of rural systems themselves—starting with clearly defined problems of practice and building outward, while continuing to learn from and contribute to approaches developed across diverse contexts.**

> **The Rural AI Strategy Lab** is designed with this approach at its core, beginning with a structured diagnosis of each team's problem of practice and supporting locally grounded design and small-scale testing before taking any effort to scale.

Invest in the Intermediary Layer

Rural systems rarely do this work alone. Across our landscape scan, the most structured examples of AI adoption were consistently connected to intermediary organizations, networks, regional agencies, and partners that provide shared infrastructure and support.

This layer is both essential and underrepresented. **While intermediary support showed up repeatedly in interviews and applications, it appeared far less frequently in publicly documented efforts, suggesting a gap between how this work happens in practice and how it is recognized across the field.** Demand for this kind of support is also clear as 51% of applicants identified peer learning or network participation as a primary motivation for their interest in joining this program.

When intermediary infrastructure is strong, systems are more likely to develop shared approaches, move beyond isolated experimentation, and sustain work over time. The field has an opportunity to invest more intentionally in this layer, not only by expanding access to networks and supports, but by recognizing intermediary organizations as key drivers of coherence across systems.

> **The Rural AI Strategy Lab** reflects this by operating through a cohort model that brings teams together for shared problem-solving and ongoing support, serving as an intermediary, and reporting back our learnings to intermediary partners that can extend and sustain the work.

Make Rural Innovation Visible

Rural innovation is already happening. What is missing is visibility. Nearly half (47%) of the schools in our scan of 241 schools and districts showed no publicly visible signal of AI use. At the same time, applications and interviews revealed a wide range of active efforts across rural systems—many of which are not reflected in national conversations about AI in education.

These efforts often take forms that differ from dominant narratives in the field. Teams described work grounded in local challenges and opportunities, from strengthening student support systems to connecting learning with workforce pathways and engaging communities in new ways.

This gap matters. When rural perspectives are absent, the field's understanding of AI adoption remains incomplete.

Making this work visible is not about representation alone. It is how the field learns, improves, and builds more relevant solutions. This requires more intentional documentation, amplification, and sharing of rural approaches, especially those that do not fit dominant narratives.

> **The Rural AI Strategy Lab** is structured not only to support participating teams but to capture and share emerging practices, helping ensure that rural systems contribute to and shape the field's broader understanding of AI in education.

Closing Invitation

The Rural AI Strategy Lab is not a study of rural AI adoption; it is a response to it. The 114 applications received from 34 states are not just a pool of participants. They are a signal that rural systems are already engaging with AI and seeking the support to do so in ways that are thoughtful, aligned, and sustainable.

The 33 finalist teams represent a cross-section of districts and schools identifying problems of practice, designing AI-enabled approaches, engaging their communities, and defining what success looks like in their contexts. Of these 33, we have selected 13 participating schools and districts to participate in a six-month learning network, ongoing coaching, and a culminating convening. These teams are working in partnership with FullScale and All4Ed to develop approaches that can extend beyond individual sites.

This work is ongoing and intentionally public. The goal is both to support participating teams and contribute to a broader field understanding of what it takes to implement AI in ways that are responsive to local context and grounded in student needs.

As one applicant put it, *"Rural schools need a voice in shaping what effective and responsible AI implementation looks like—not just having solutions handed down."* This brief, and the work that follows, is an invitation to the field to listen, learn, and build alongside them.

Building Bridges. Transforming Systems. Realizing Potential.

fullscalelearning.org

Denali Borough School District
P.O. Box 280 • Healy, Alaska 99743 • (907) 683-2278 • FAX (907) 683-2514

Reading for 28 May 2026

"[If you want to build a boat…] One will weave the canvas; another will fell a tree by the light of his ax. Yet another will forge nails, and there will be others that observe the stars and learn how to navigate. And yet all will be as one. Building a boat isn't about people weaving a canvas, forging nails, or reading the sky. It's about teaching them to yearn for the vast and endless sea."

– ***By Antoine de Staint-Exupery***

Denali Borough School District
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MEMORANDUM OF AGREEMENT

Between

Denali Borough School District

And

Alaskan Bounty for Children (ABC)

Effective Date: July 1, 2025
Term of Agreement: July 1, 2025 – June 30, 2027 (renewable annually thereafter)

I. PURPOSE

The purpose of this Memorandum of Agreement (MOA) is to establish the roles, responsibilities, and collaborative relationship between the Denali Borough School District (hereafter "DBSD") and Alaskan Bounty for Children (hereafter "ABC") to provide locally prepared, nutritious school lunches to students attending DBSD schools (Anderson, Cantwell, and Tri-Valley). These meals will be provided free of charge to students or to the District.

II. OBJECTIVES

- To ensure that all students in DBSD schools have access to nutritious and appealing lunches during the academic year.
- To utilize ABC's capacity to prepare, arrange service, and manage school lunches from DBSD kitchen facilities.
- To establish a shared understanding of facility use, food safety, staffing, logistics, communication, and review processes.

III. RESPONSIBILITIES OF ALASKAN BOUNTY FOR CHILDREN (ABC)

ABC agrees to:

1. **Meal Preparation & Service**
    - Prepare and arrange service of daily lunches at all DBSD school sites with kitchen facilities
    - Provide meals to all students free of charge and without discrimination.
2. **Staffing/Volunteers**
    - Hire, supervise, and direct personnel involved in meal preparation and service.
    - Recruit and train volunteers to help support this student lunch program.
    - Ensure all staff and volunteers meet health and safety standards, possess valid food handler certifications, and undergo required background checks (to conducted be the District).

3. **Food Safety & Compliance**
    - Follow all applicable federal, state, and local regulations regarding food storage, preparation, sanitation, and service.
    - Maintain appropriate documentation for health inspections and food safety compliance.
4. **Kitchen Use & Equipment Care**
    - Use DBSD kitchen facilities and equipment responsibly and return them to a clean, safe, and functional condition each day.
    - Notify DBSD promptly of any equipment malfunctions or facility issues.
5. **Reporting & Communication**
    - Submit an annual summary of meals served and program highlights to DBSD administration in the spring, and on request.
    - Collaborate with DBSD on special events, surveys, and feedback related to the lunch program.

IV. RESPONSIBILITIES OF DENALI BOROUGH SCHOOL DISTRICT (DBSD)

DBSD agrees to:

1. **Facility Access**
    - Provide reasonable access to designated school kitchens and serving areas for ABC personnel during agreed-upon times for meal preparation, service, and clean-up.
2. **Utilities & Equipment**
    - Provide use of existing kitchen equipment, water, electricity, and waste disposal services necessary for meal production and service.
    - Maintain building infrastructure and core kitchen equipment in working order, excluding damage caused by negligence or misuse by ABC personnel.
    - Ensure that the kitchens being used for food preparation are properly certified and inspected by the Alaska Department of Environmental Conservation.
3. **Student Rosters & Schedules**
    - Provide ABC with student enrollment numbers and school lunch schedules to support accurate meal planning and service.
4. **Oversight & Collaboration**
    - Designate a DBSD staff member as a liaison to coordinate communication with ABC.
    - DBSD shall conduct and pay for background checks for all ABC staff and volunteers working in school facilities under this program.
    - DBSD shall provide student supervision for students being served lunch in the program.
    - Include ABC in any relevant health, safety, or emergency protocols pertaining to food service.

V. COSTS AND FUNDING

- ABC shall cover all operational costs associated with meal preparation and service, including food, supplies, and transportation.
- DBSD shall pay all utility costs related to the student lunch program.
- DBSD shall not be responsible for reimbursing any costs associated with the lunch program unless mutually agreed upon in writing.

VI. LIABILITY AND INSURANCE

- ABC shall maintain appropriate general liability insurance and, to the extent required by law, workers' compensation coverage for its personnel when working on school property.
- ABC shall hold DBSD harmless from any claims arising from its meal service operations, except in cases of gross negligence or misconduct by DBSD staff or other groups using the space with permission from DBSD.
- ABC shall add DBSD as an additional insured on their general liability policy for bodily injury or property damage caused by ABC's work or operations.

VII. TERM AND TERMINATION

- This agreement shall be effective from **July 1, 2025**, through **June 30, 2027**, and may be renewed annually upon mutual written consent.
- Either party may terminate this agreement with **90 days' written notice**.
- Immediate termination may occur by either party in the event of a serious breach of health, safety, or legal compliance.

VIII. AMENDMENTS

This MOA may be amended at any time by mutual written agreement of both parties.

IX. SIGNATURES

By signing below, the parties affirm that they have the authority to enter into this agreement and commit to fulfilling the responsibilities outlined above.

For Denali Borough School District
Name: Dan Polta
Title: Superintendent
Signature: _____
Date: 24 April 2026

For Alaskan Bounty for Children
Name: Cali Best
Title: President
Signature: _____
Date: 4/24/26

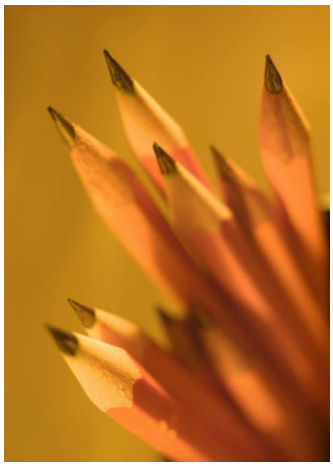
Denali Borough School District

Course Guide

2026 - 2027

Anderson, Cantwell, PEAK Correspondence and Tri-Valley Schools

Introduction



This guide has been designed to assist the students and parents of the Denali Borough School District (DBSD) in developing a four-year high school program of study. Students and parents should remember to select courses that meet the DBSD Graduation Requirements. Students are also encouraged to select courses that meet their own individual interest, ability level, and goals. The eligibility requirements for the Alaska Performance Scholarship (APS) may also be another important consideration when planning courses of study. The DBSD Graduation Requirements, as well as the APS Eligibility Requirements are included within this course guide.

Students and their parents are encouraged to explore career options with a counselor or other school administrator to help identify education needs. Plan ahead and consider options for a four-year program (grades 9-12) that will meet your education needs and personal interests. It is also important to have a couple of alternative courses selected when scheduling. The school's master schedule is developed with consideration to course rotation, course requests, and student demand. The courses listed in this guide are possible courses that will be offered within the Denali Borough School District and are meant as a guideline for students and parents when scheduling. The courses listed within the guide will not be offered at every site, nor will they all be offered during every school year.

Calendar

2026-2027 DBSD DRAFT SCHOOL CALENDAR

18 New Teachers' First Day
19 All Teachers' First Day
19-21 In-Service – No School
24-25 Teacher Workdays – No School
26 Classes Begin

AUGUST

S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

7 Labor Day – No School
21 In-Service – No School

SEPTEMBER

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

12 In-Service and Columbus/Indigenous People's Day
21 Student-Led Conferences – No School

OCTOBER

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

26-27 Thanksgiving – No School

NOVEMBER

S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

21-31 Winter Break – No School

DECEMBER

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1 Winter Break – No School
4 Teacher Workday – No School
5 Classes Resume
18 In-Service and Martin Luther King Day

JANUARY

S	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

FEBRUARY

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

15 Inservice and Presidents' Day

MARCH

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

8-12 Spring Break – No School
15 Teacher Workday – No School
24 Student-Led Conferences – No School

APRIL

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

5 In-Service – No School

MAY

S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

27 Last Day of School/End of Semester
28 Teacher Workday – No School

JUNE

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

JULY

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

5 – Observed for Independence Day on Sunday the 4th.

Graduation Requirements

High School Graduation Requirements, **BP 6146.1(a)**

HIGH SCHOOL GRADUATION REQUIREMENTS The Denali Borough School District believes in high academic standards and the development of the individual student to enhance success in life after high school.

The Denali Borough School District supports eight (8) semesters or more of full-time, active participation (five (5) or more classes per semester).

The following are the minimum graduation requirements:

Complete standard eight (8) semesters of full time five (5 or more classes) active participation, or receive waiver.

Minimum graduation credits will be as follows:

Subject Area	Credits
Math	(4 Credits)
Language Arts	(4 Credits)
Science	(3 Credits)
Social Studies	(3 Credits*)
Career Technical Education	(1 Credit)
PE	(1 Credit**)
Health	(.5 Credit)
Electives	(5.5 Credits)

TOTAL 22 Credits Total

Additional credits in Social Studies and Science are recommended.

*to include .5 Credit Government, at least .5 Credit of Alaska Studies and 1 Credit U.S. History

**PHYSICAL EDUCATION/SKILLS FOR A HEALTHY LIFE CREDIT The equivalent of one-quarter (1/4) credit for the Physical Education requirement may be waived for each full season of participation in approved interscholastic athletic competition. School principals will provide a list of approved sports. To receive credit a student must remain eligible for the entire season. The total credit waived shall not exceed one (1) credit. Elective credit

must be earned to replace the credit that is waived. A waiver of credit under this section does not affect the overall minimum graduation requirements.

BP 5145.3

District programs and activities shall be free from discrimination with respect to sex, race, color, religion, national origin, ethnic group, marital or parental status, and physical or mental disability. The School Board shall ensure equal opportunities for all students in admission and access to academic courses, guidance and counseling programs, athletic programs, testing procedures, vocational education and other activities. Separate arrangements may be made for students according to sex during sex education programs and physical education activities involving bodily contact. School staff and volunteers must be especially careful to guard against unconscious sex discrimination and stereotyping in instruction, guidance and supervision.

Alaska Performance Scholarship

The Alaska Performance Scholarship (APS) is a merit-based scholarship for Alaska high school graduates meeting a core set of requirements to receive funding for college and/or career training in Alaska. More information can be found at: http://akadvantage.alaska.gov/Grants_and_Scholarships/Alaska_Performance_Scholarship.aspx

Eligibility Requirements:

- **Level 1: (Up to $7,000 per year)**
  - High School GPA 3.5
  - ACT – 25 or SAT – 1680 prior to March 2016 , 1210 after March 2016
  - If applying for the Career and Technical Education (CTE) award only – then a score of 18 with no individual score below four () in Math, Reading, and Locating Information on the WorkKeys may be substituted for the ACT or SAT requirement.
  - There are three curriculum options (A, B, and C) for qualifying for the APS Scholarship. Please see the 2024_APS_Checklist at https://acpe.alaska.gov/Funding-Solutions/Alaska-Performance-Scholarship.
- **Level 2: (Up to $5,250 per year)**
  - High School GPA 3.0
  - ACT – 23 or SAT – 1560 prior to March 2016 , 1130 after March 2016
  - If applying for the Career and Technical Education (CTE) award only – then a score of 15 with no individual score below four (5) in Math, Reading, and Locating Information on the WorkKeys may be substituted for the ACT or SAT requirement.
  - The Level 2 Scholarship has the same credit requirements as identified in the curriculum options in Level 1 (above).
- **Level 3: (Up to $3,500 per year)**
  - High School GPA 2.5
  - ACT – 21 or SAT – 1450 prior to March 2016 , 1060 after March 2016
  - If applying for the Career and Technical Education (CTE) award only – then a score of 12 with no individual score below four (4) in Math, Reading, and

Locating Information on the WorkKeys may be substituted for the ACT or SAT requirement.

- The Level 3 Scholarship has the same credit requirements as identified in the curriculum options in Level 1 (above).

Course Planning Worksheet

4 credits – Language Arts
4 credits – Mathematics
3 credits- Science
3 credits – Social Studies (to include: 0.5 cr. Alaska Studies, 0.5 cr. Government, 1 cr. US History)
1 credit – Technology/Careers
1 credit – Physical Education
0.5 credits – Health
5.5 credits – Electives

Directions: Below are the minimum requirements for graduation from the Denali Borough School District. Check off the boxes as you complete your high school plan of study. There are additional requirements for the Alaska Performance Scholarship (APS).

9th grade		10th grade		11th grade		12th grade	
1st Semester	2nd Semester	1st Semester	2nd Semester	1st Semester	2nd Semester	1st Semester	2nd Semester

11th Grade – Work Keys, ACT and/or SAT

Work-Based Learning Opportunities	Career & Technical Organizations	Certifications
Apprenticeship Cooperative Education Service Learning Internship(s) Job Shadowing School-Based Enterprise		
What is a Plan of Study? Suggested classes within a career pathway that aligns high school and postsecondary options. This may include college education, apprenticeship, or other training that leads students to an industry-recognized credential or certificate.	**Interested in an Apprenticeship?** Research apprenticeship opportunities at: www.jobs.state.ak.us/apprentice	
Plan and Organize Your Future Checklist:		
Keep your grade reports; know your GPA, and print out your transcripts. Keep a portfolio including your best high school work. Track community service or volunteer work. Take placements tests. Apply for college or other training. Apply for financial aid at: www.fafsa.ed.gov Figure out school and housing costs. Meet with an advisor. Register for classes and attend orientation.		

Course Descriptions

CAREER & TECHNICAL DEVELOPMENT

Graduation Requirement
1 credit

Advanced Computer Applications

Course # N10008 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: Successful Completion of Intro to Computer Technology Course

In Advanced Computer Applications courses, students acquire knowledge of and experience in the proper and efficient use of previously written software packages. These courses explore a wide range of applications and pursue professional certification in areas, including (but not limited to), Microsoft Office, Microsoft Technician, and Adobe Creative Suite, Autodesk, and Business. In this course students complete certificates from an approved list of advanced programs (available from the instructor) in a suite after completing introductory programs of that suite. (This course may be repeated in subsequent years for credit with instructor approval if student elects to complete a different software suite's certificates)

Applied Computer Technology

Course # N10003 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: Successful Completion of Intro to Computer Technology Course

Computer and Information Technology courses teach students to operate and use computer and information technology, emphasizing their role as tools to communicate more effectively, conduct research more efficiently, and increase productivity. Course content includes the legal and ethical issues involved with computer technology and use.

Automotive

Course # N20103 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Primarily intended as a personal automobile mechanics course, but also useful for students exploring future careers in automotive technologies. Introduction to Automobiles courses expose students to the various mechanical systems in automobiles and provide basic experience in maintenance tasks. The course may also cover career opportunities in the automotive and/or transportation fields.

Aviation

Course # N20053 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Aviation courses provide students with an understanding of the science of flight and typically include the history, regulations, and possible career paths within the aviation industry. Aviation courses usually cover physics, the relationships of weight and balance, principles of navigation and flight control, ground and airport operations and services, and Federal Aviation Agency regulations.

Building Trades I

Course # N17003 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Building Trades is a carpentry course which provides information related to the building of wooden structures, enabling students to gain an understanding of wood grades and construction methods and to learn skills such as laying sills and joists; erecting sills and rafters; applying sheathing, siding, and shingles; setting door jambs; and hanging doors. Carpentry courses may teach skills for rough construction, finish work, or both. Students learn to read blueprints, draft, use tools and machines properly and safely, erect buildings from construction lumber, perform finish work inside of buildings, and do limited cabinet work.

Building Trades II

Course # N17002 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Building Trades I

Building Trades II is an advanced carpentry course which provides information related to the building of wooden structures, enabling students to gain an understanding of wood grades and construction methods and to learn skills such as laying sills and joists, erecting sills and rafters, applying sheathing, siding, and shingles; setting door jambs; and hanging doors. Students learn to read blueprints, draft, use tools and machines properly and safely, erect buildings from construction lumber, perform finish work inside of buildings, and do limited cabinet work.

Career Exploration/ Development

Recommended
Course # N22151 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Career Exploration courses help students identify and evaluate personal goals, priorities, aptitudes, and interests with the goal of helping them make informed decisions about their careers. These courses expose students to various sources of information on career and training options and may also assist them in developing job search and employability skills. Students will make use of the online AKCIS program for career portfolio building. AKCIS is a statewide tool designed for secondary and postsecondary planning and career exploration.

Career/Technical (CTE) Exploratory

Course # N17001 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Construction Career Exploration courses expose students to the opportunities available in construction-related trades, such as carpentry, masonry, air conditioning/refrigeration, plumbing, and so on. Students learn about the processes involved in construction projects and may engage in a variety of small projects. These courses emphasize responsibilities, qualifications, work environment, rewards, and career paths within construction-related fields.

Computer Applications

Course # N10004 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

In Computer Applications courses, students acquire knowledge of and experience in the proper and efficient use of previously written software packages. These courses explore a wide range of applications and pursue professional certification in areas, including (but not limited to), Microsoft Office, Microsoft Technician, and Adobe Creative Suite, Autodesk, and Business. In this course students complete certificates from an approved list of introductory programs available from the instructor.. (This course may be repeated in subsequent years for credit with instructor approval if student elects to start a different software suite's introductory certificates)

Exploring Computer Science

Course # N10012 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Course presents students with the conceptual underpinnings of computer science through an exploration of human computer interaction, web design, computer programming, data modeling, and robotics. While these courses include programming, the focus is on the computational practices associated with doing computer science, rather than just a narrow focus on coding, syntax, or tools. Exploring Computer Science courses teach students the computational practices of algorithm design, problem solving, and programming within a context that is relevant to their lives.

Exploration of Health Care Occupations

Course # N14001 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor
***1 semester can be used as Health course toward graduation requirements with prior approval of Counselor and Site Administrator.**

Exploration of Health Care Occupations course exposes students to the variety of opportunities available within the healthcare industry (e.g., such as nursing, therapy, dental care, administrative services, and lab technology). This course provides experiences in

several of these occupational clusters, along with information and knowledge related to the healthcare industry as a whole.

Health Care Occupations-Comprehensive

Course # N14002 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of N14001

Health Care Occupations Comprehensive course provides students with an orientation to the healthcare industry and helps refine their health care-related knowledge and skills. Topics covered include (but are not limited to) an overview of health care delivery, patient care, including assessment of vital signs, body mechanics, and diet; anatomy and physiology; identification and use of medical equipment and supplies; medical terminology; hygiene and disease prevention; first aid and CPR procedures; laboratory procedures; and ethical and legal responsibilities.

Intensive/CTE

Course # N22990 **Grades: 9-12**
Length: 2 Weeks **Credit: 0.25**
Prerequisite: High School Standing

Intensive/CTE courses provide a specific introduction to a variety of topics, typically career/technical subject areas, often in the form of discrete units or modules. Students may choose to take courses later that allow them to pursue the topics introduced in more depth.

Intensive/Exploratory

Course # N22250 **Grades: 9-12**
Length: 2 Weeks **Credit: 0.25**
Prerequisite: High School Standing

Intensive / exploratory courses provide a brief introduction to a variety of topics, typically elective subject areas, often in the form of discrete units or modules. Students may choose to take courses later that allow them to pursue the topics introduced in more depth. Topics may vary widely and span multiple subject areas within one course.

Internship

Course N22998 **Grades: 11-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: Approval of Building Administrator and Pending Placement by Internship Coordinator

Workplace Experience courses provide students with experience in a field related to their desired career and/or in coordination with post-secondary planning. Goals are set cooperatively by the student, teacher, and employer (although students are not necessarily paid). These courses may include classroom activities as well, involving further study of the field or discussion regarding experiences that students encounter in the workplace. Specific guidelines and requirements are available in the DBSD Internship Handbook.

Intro to Computer Technology

Recommended
Course # X10001 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Introduction to Computer courses introduce students to computers and peripheral devices, the functions and uses of computers, the language used in the computer industry, possible applications of computers, and occupations related to computer hardware and software. These courses typically explore legal and ethical issues associated with computer use, as well as how computers influence modern society. Students may also be required to perform some computer operations.

Mac Tech - Apple Certification

Course # N10251 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

The Mac Tech course provides hands on instruction in computer maintenance focusing primarily on hardware systems and learning about how to troubleshoot the operating system. Apple Mac Tech certification is the goal of this course and students are expected to prepare for and take the Apple exam for this certification. Training includes but is not limited to tasks such as: installation, configuration, diagnosing, preventive maintenance, basic networking, security, safety, and environmental issues. Students are also instructed in professional ethics for technology usage.

Small Engine Mechanics

Course # N20110 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Small Engine Mechanics courses provide students with the opportunity to learn how to service and recondition small engines, typically emphasizing two- and four-cycle engines. These courses provide students with opportunities to troubleshoot and repair speed controls, lubrication, ignition, fuel, power transfer, cooling, exhaust, and starting systems; use hand, power, and overhaul tools; and read and interpret service manuals and parts' catalogs. Applications may include lawn mowers, tractors, tillers, power tools, and so on.

STEM Career Exploration / Design and Fabrication

Course # **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5 or 1.0**
Prerequisite: High School Standing or Approval of Instructor

This class will delve into many aspects found in career and technical education including digital and nondigital design and manufacturing, UGV and UAV development and programing, as well as short experiential introductions to many trades. Students will explore and develop skills in the following topics: Entrepreneurship, logistics, communication, customer service, AutoCad and digital design, production and finishing, quality assurance, unmanned vehicle development and programming hardware and software, drone development and piloting. Collaboration and Teamwork; Fundamentals of the Design Process; Manual and CAD drawing, Problem--Solving; Safe use of tools in material processing; Modeling; Troubleshooting Process.

Welding I

Course # N13207 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Welding enable students to gain knowledge of the properties, uses, and applications of various metals, skills in various processes used to join and cut metals (such as oxyacetylene, shielded metal, metal inert gas, and tungsten arc processes), and experience in identifying, selecting, and rating appropriate techniques. Welding includes instruction in interpreting

blueprints or other types of specifications. In this course students learn basic safety skills then move into introductory welding skills.

Welding II

Course # N13208 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: Welding I or Approval of Instructor

Welding enable students to gain knowledge of the properties, uses, and applications of various metals, skills in various processes used to join and cut metals (such as oxyacetylene, shielded metal, metal inert gas, and tungsten arc processes), and experience in identifying, selecting, and rating appropriate techniques. Welding includes instruction in interpreting blueprints or other types of specifications. In this course students expand on the skills introduced in welding I and learn additional welding skills

ELECTIVES

Graduation Requirement
5.5 credits

Art Appreciation

Course # X05151 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Art Appreciation courses introduce students to the many forms of art and help them form an aesthetic framework through which they can judge and critique art of various ages and cultures. These courses also explore the place and significance of art in our society.

Art (Visual) – Special Topics

Course # N05197 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Visual Art Independent Study courses, often conducted with instructors or professional artists as mentors, enable students to explore a particular art form or topic. Independent Study courses may serve as an opportunity for students to expand their expertise in a particular form or style, to explore a topic in greater detail, or to develop more advanced skills.

Art (Visual) – Studio

Course # X05154 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Creative Art-Comprehensive courses provide students with the knowledge and opportunity to explore an art form and to create individual works of art. These courses may also provide a discussion and exploration of career opportunities in the art world. Initial courses cover the language, materials, and processes of a particular art form and the design elements and principles supporting a work of art. As students advance and become more adept, the instruction regarding the creative process becomes more refined, and students are encouraged to develop their own artistic styles. Although Creative Art courses focus on creation, they may also include the study of major artists, art movements, and styles.

Band

Course # X05101 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

General Band courses develop students' technique for playing brass, woodwind, and percussion instruments and cover a variety of non-specified band literature styles (concert, marching, orchestral, and modern styles).

Choir

Course # X05110 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Chorus courses provide the opportunity to sing a variety of choral literature styles for men's and/or women's voices and are designed to develop vocal techniques and the ability to sing parts.

Classroom/Office Aide

Course # N22051 **Grades: 10-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: Approval of Instructor

Office Aide courses provide students with developing skills related to clerical office work. Duties may include typing, filing, record-keeping, receiving visitors, answering the telephone, and duplicating, among others. These courses emphasize appropriate work attitudes, human relations, and proper office procedures.

Civil Air Patrol

Course # N09501 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: Approval of Instructor

The Civil Air Patrol Cadet Program offer an exciting form of character education that uses the students' enthusiasm for aviation, space, and technology as a motivator. As an in-school program, Civil Air Patrol is an alternative to Junior ROTC – a program only possible in the large schools in the State. The Cadet Program is a self-paced program of sixteen achievements. Cadets complete one task in each element of cadet life – leadership, aerospace, fitness, and character – during each achievement. There is a degree of academic rigor to the program; cadets study their textbooks and must pass written tests to advance. Along the way, cadets earn promotions, acquire new leadership responsibilities, and collect awards.

Cooking/Culinary Arts

Course # N22202 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Food and Nutrition courses provide students with an understanding of food's role in society, instruction in how to plan and prepare meals, experience in the proper use of equipment and utensils, and background on the nutritional needs and requirements for healthy living. Some classes place a heavier emphasis on the nutritional components of a balanced diet, while others concentrate on specific types of food preparation. Although these courses may present career opportunities in the foodservice industry, their emphasis is not career-related.

Intensive/Exploratory

Course # N22250 **Grades: 9-12**
Length: 2 Weeks **Credit: 0.25**
Prerequisite: High School Standing

Intensive/exploratory courses provide a brief introduction to a variety of topics, typically elective subject areas, often in the form of discrete units or modules. Students may choose to take courses later that allow them to pursue the topics introduced in more depth. Topics may vary widely and span multiple subject areas within one course.

Leadership

Course # N22101 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Leadership courses are designed to strengthen students' personal and group leadership skills. Typically intended for students involved in extracurricular activities (especially as officers of organizations or student governing bodies), these courses may cover such topics as public speaking, effective communication, human relations, parliamentary law and procedures, organization and management, and group dynamics.

Music – Independent Studies

Course # X05147 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: Approval of Instructor

Music – Independent Studies courses, often conducted with instructors, professional musicians, or voice coaches as mentors, enable students to explore music-related topics. Independent Study courses may serve as an opportunity for students to expand their expertise in a particular form or style, to explore a topic in greater detail, or to develop more advanced skills.

Study Hall

Course # N22006 **Grades: 9-12**
Length: 2 Semesters **Credit: None**
Prerequisite: Recommendation of Teacher and Approval of Principal

Study Hall courses provide students with the opportunity and time to complete classroom assignments or school projects. Students typically work on their own, without the help of a tutor; however, they are supervised and usually remain in the classroom.

Study Skills

Course # N22003 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Recommendation of Teacher and Approval of Principal

Study Skills courses prepare students for success in high school and/or for postsecondary education. Course topics may vary according to the students involved, but typically include reading improvement skills, such as scanning, note-taking, and outlining; library and research skills; listening and note-taking; vocabulary skills; and test-taking skills. The courses may also include exercises designed to generate organized, logical thinking and writing.

Robotics

Course # N21009 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Approval of Instructor

Robotics courses develop and expand students' skills and knowledge so that they can design and develop robotic devices. Topics covered in the course may include mechanics, electrical and motor controls, pneumatics, computer basics, and programmable logic controllers.

Tutoring Practicum

Course # N22054 **Grades: 10-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: Approval of Instructor

Tutoring Practicum courses provide students with the opportunity to offer tutorial assistance to their peers or to younger students. After an initial training period during which students learn how to work with other students and how to make use of the available resources (e.g., staff, written material, audiovisual aids, and so on), students engage in tutoring and assisting others who need or request help.

Yearbook

Course # N11102 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Yearbook is a photojournalism courses that expose students to the manner in which photography is used to convey information and experiences. Coordinated with production of the yearbook, this photojournalism course provides students with the opportunity to improve their photo composition and film development skills, and to apply their art to journalistic endeavors. Specific focus on photography materials, processes, and the artistic techniques of taking artistic photographs may also be included upon instructor discretion.

FOREIGN LANGUAGES

Recommended

German I

Course # X06201 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Designed to introduce students to German language and culture, German I courses emphasize basic grammar and syntax, simple vocabulary, and the spoken accent so that students can read, write, speak, and understand the language at a basic level within predictable areas of need, using customary courtesies and conventions. German culture is introduced through the art, literature customs, and history of the German-speaking people.

German II

Course # X06202 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of German I or Approval of Instructor

German II courses build upon skills developed in German I, extending students' ability to understand and express themselves in German and increasing their vocabulary. Typically, students learn how to engage in discourse for informative or social purposes, write expressions or passage that show understanding of sentence construction and the rules of grammar, and comprehend the language when spoken slowly. Students usually explore the customs, history, and art forms of German-speaking people to deepen their understanding of the culture(s).

Spanish I

Course # X06101 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Designed to introduce students to Spanish language and culture, Spanish I courses emphasize basic grammar and syntax, simple vocabulary, and the spoken accent so that students can read, write, speak, and understand the language at a basic level within predictable areas of need, using customary courtesies and conventions. Spanish culture is introduced through the art, literature, customs, and history of Spanish speaking people. (Offered Every Other Year at some sites)

Spanish II

Course # X06102 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Spanish I or Approval of Instructor

Spanish II courses build upon skills developed in Spanish I, extending students' ability to understand and express themselves in Spanish and increasing their vocabulary. Typically, students learn how to engage in discourse for informative or social purposes, write expressions or passages that show understanding of sentence construction and the rules of grammar, and comprehend the language when spoken slowly. Students usually explore the customs, history, and art forms of Spanish-speaking people to deepen their understanding of the culture(s). (Offered every other year at some sites)

LANGUAGE ARTS

Graduation Requirement
4 credits (8 semesters)

American Literature

Course # X01054 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

American Literature courses focus upon commonly known American authors and their work. Students improve their critical-thinking skills as they determine the underlying assumptions and values within the selected works and as they understand how the literature reflects the society of the time. Oral discussion is an integral part of literature courses, and written compositions are often required.

British Literature

Course # X01056 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

British Literature courses may be provide a survey of British literature or may focus on a selected timeframe of England's history. Students improve their critical-thinking skills as they determine the underlying assumptions and values within the selected works and as they understand how the literature reflects the society of the time. Oral discussion is an integral part of literature courses, and written compositions are often required.

Classic/Contemporary Literature

Course # X01053 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Classic and Contemporary Literature courses offer the opportunity for students to study and reflect upon the themes presented in the body of literature being presented. Students improve their critical-thinking skills as they determine the underlying assumptions and values within the reading selection and as they understand how the work reflects society's problems and culture. Oral discussion is an integral part of literature courses, and written compositions are often required. Literature courses may survey representative works, reflect a particular genre or a specific theme, or survey works of a particular time or people.

Creative Writing

Course # X01104 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Creative Writing courses offer students the opportunity to develop and improve their technique and individual style in poetry, short story, drama, essays, and other forms of prose. The emphasis of the courses is on writing; however, students may study exemplary representations and authors to obtain a fuller appreciation of the form and craft. Although most creative writing classes cover several expressive forms, others concentrate exclusively on one particular form (such and poetry or playwriting).

English 9

Course # X01001 **Grade: 9**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

English/Language Arts I (9th grade) courses build upon students' prior knowledge of grammar, vocabulary, word usage, and the mechanics of writing and usually include the four aspects of language use: reading, writing, speaking, and listening. Typically, these courses introduce and define various genres of literature, with writing exercises often linked to reading selections.

English 10

Course # X01002 **Grade: 10**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful
Completion of English 9 or Approval of Instructor

English/Language Arts II (10th grade) courses usually offer a balanced focus on composition and literature. Typically, students learn about the alternate aims and audiences of written compositions by writing persuasive, critical, and creative multi-paragraph essays and compositions. Through the study of various genres of literature, students can improve their reading rate and comprehension and develop the skills to determine the author's intent and theme and to recognize the techniques used by the author to deliver his or her message.

English 11

Course # X01003 **Grade: 11**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of English 10 or Approval of Instructor

English/Language Arts III (11th grade) courses continue to develop students' writing skills, emphasizing clear, logical writing patterns, word choice, and usage, as students write essays and begin to learn the techniques of writing research papers. Students continue to read works of literature, which often form the backbone of the writing assignments. Literary conventions and stylistic devices may receive greater emphasis than in previous courses.

English 12

Course # X01004 **Grade: 12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of English 11 or Approval of Instructor

English/Language Arts IV (12th grade) courses blend composition and literature into a cohesive whole as students write critical and comparative analyses of selected literature, continuing to develop their language arts skills. Typically, students primarily write multi-paragraph essays, but they may also write one or more major research papers.

Sustained Silent Reading/ Literature (SSR/Lit)

Course # X01066 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Strategic Reading courses are intended to improve a student's vocabulary, critical-thinking and analysis skills, or reading rate and comprehension level. Although these courses typically emphasize works of fiction, they may also include works of nonfiction (including textbooks). Strategic Reading courses often have a time-management focus, offering strategies for note-taking or for understanding and evaluating the important points of a text.

Technical Writing

Course # X01105 **Grades: 9-12**

Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Research/Technical Writing classes prepare students to write research papers and/or technical reports. These classes emphasize researching (primary and secondary sources), organizing (material, thoughts, and arguments), and writing in a persuasive or technical style.

World Literature

Course # X01058 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

World Literature courses use representative literature selections from ancient and/or modern times from countries around the world. Students improve their critical-thinking skills, as they comprehend the diversity of literary traditions and the influences of those traditions. Oral discussion is an integral part of literature courses, and written compositions are required.

MATHEMATICS

Graduation Requirement
4 credits (8 semesters)

Accounting

Course # N12104 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Approval of Instructor

Accounting courses introduce and expand upon the fundamental accounting principles and procedures used in businesses. Course content typically includes the full accounting cycle, payroll, taxes, debts, depreciation, ledger and journal techniques, and periodic adjustments. Students may learn how to apply standard auditing principles and to prepare budgets and final reports. Calculators, electronic spreadsheets, or other automated tools are usually used. Advanced topics may include elementary principles of partnership and corporate accounting and the managerial uses of control systems and the accounting process.

Algebra I

Course # X02052 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or approval of Instructor

Algebra I courses include the study of properties and operations of the real number system; evaluating rational algebraic expressions; solving and graphing first degree equations and inequalities; translating word problems into equations; operations with and factoring of polynomials; and solving simple quadratic equations.

Algebra IA

Course # X02053 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or approval of instructor

The first part in a multipart sequence of Algebra I. This course generally covers the same topics as the first semester of Algebra I, including the study of properties of rational numbers (i.e., number theory), ratio, proportion, and estimation, exponents and radicals, the rectangular coordinate system, sets and logic, formulas, and solving first-degree equations and inequalities.

Algebra IB

Course # X02054 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Algebra IA or Approval of Instructor

The second part in a multipart sequence of Algebra I. This course generally covers the same topics as the second semester of Algebra I, including the study of properties of the real number system and operations, evaluating rational algebraic expressions, solving and graphing first-degree equations and inequalities, translating word problems into equations, operations with and factoring of polynomials, and solving simple quadratics.

Algebra II

Course # X02056 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Algebra I or Approval of Instructor

Algebra II course topics typically include field properties and theorems; set theory; operations with rational and irrational expressions; factoring of rational expressions; in-depth study of linear equations and inequalities; quadratic equations; solving systems of linear and quadratic equations; graphing of constant, linear, and quadratic exponents equations; properties of higher degree equations; and operations with rational and irrational exponents.

AVTEC Mathematics for the Trades

Course # X02152 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Algebra I or Approval of Instructor

AVTEC Math is a Workplace Experience mathematics. The course provides students with workplace skills in a field related to mathematics. This course provides classroom activities, involving further study of the field or discussion regarding math experiences that students encounter in the workplace.

College Mathematics

Course # X02138 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Geometry and Algebra II or Approval of Instructor

College Mathematics covers topics from both Math Analysis and Analytic Geometry; these courses prepare students for eventual work in calculus. Topics include the study of polynomial, logarithmic, exponential, and rational functions and their graphs; vectors; set theory; Boolean algebra and symbolic logic; mathematical induction; matrix algebra; sequences and series; and limits and continuity the polar coordinate system; equations and graphs of conic sections; rotations and transformations; and parametric equations.

Calculus

Course # X02121 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Pre-Calculus or Approval of Instructor

Calculus courses include the study of derivatives, differentiation, integration, the definite and indefinite integral, and applications of calculus. Typically, students have previously attained knowledge of precalculus topics (some combinations of trigonometry, elementary functions, analytic geometry, and math analysis).

Data Science

Course # X02999 **Grades: 11-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Algebra I or Approval of Instructor

This Data Science course engages students with opportunities to understand the data science process including asking questions, gathering and organizing data, modeling, analyzing and synthesizing, and communicating. Students learn through making sense of complex problems, then through an iterative process of formulation and reformulation come to a reasoned argument for the choices they will make. Students develop their understanding of data analysis, sampling, correlation/causation, bias and uncertainty, modeling with data, making and evaluating data-based arguments, and the importance of data in society. Students also develop their explanatory writing skills through communication at every stage of the data science process. This course can also be taken for science, CTE, or elective credit.

General Math

Course # X02002 **Grades: 9-12**

Length: 2 Semesters **Credit: 1.0**
Prerequisite: Recommendation of Instructor

General Math courses (areas of study such as Consumer Mathematics) reinforce and expand students' foundational math skills such as arithmetic operations using rational numbers; area, perimeter, and volume of geometric figures, congruence and similarity, angle relationships, the Pythagorean theorem, the rectangular coordinate system, set and logic, ratio and proportion, estimation, formulas, solving and graphing simple equations and inequalities.

Geometry

Course # X02072 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Algebra I or Approval of Instructor

Geometry courses, emphasizing an abstract, formal approach to the study of geometry, typically include topics such as properties of plane and solid figures; deductive methods of reasoning and use of logic; geometry as an axiomatic system including the study of postulates, theorems, and formal proofs; concepts of congruence, similarity, parallelism, perpendicularity, and proportion; and rules of angle measurement in triangles.

Introduction to Logic

Course # X02990 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Algebra I or Approval of Instructor

This course is an introduction to Logic from a computational perspective. It shows how to encode information in the form of logical sentences; it shows how to reason with information in this form; and it provides an overview of logic technology and its applications - in mathematics, science, engineering, business, law, and so forth. Skills you will gain include: Relational Algebra, Problem solving, Propositional Calculus, Mathematical Logic.

Personal Finance

Course # **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Algebra 1 or Approval of Instructor

Personal Finance is designed to equip high school students in grades 9–12 with the practical knowledge and decision-making skills needed to manage their financial lives

successfully. Through a combination of direct instruction, real-world simulations, case studies, project-based learning, and technology-based tools, students will explore core personal finance topics including income and career planning, budgeting and spending, saving and investing, credit and debt management, insurance and risk management, taxation, consumer rights, and giving and philanthropy. Special attention may be given to Alaska-specific financial contexts, including the Permanent Fund Dividend, rural cost-of-living considerations, and regional economic opportunities. This course is designed to complement and reinforce skills developed in mathematics and social studies while providing a unique applied context that prepares students for the financial realities of adult life in Alaska and beyond. This course can also be taken for social studies, CTE, or elective credit.

Pre-Algebra

Course # X02051 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Middle School Mathematics or Approval of Instructor

Pre-Algebra courses increase students' foundational math skills and prepare them for Algebra I by covering a variety of topics, such as properties of rational numbers (i.e., number theory), ratio, proportion, estimation, exponents and radicals, the rectangular coordinate system, set and logic, formulas, and solving first-degree equations and inequalities.

Pre-Calculus

Course # X02110 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Successful Completion of Trigonometry or Approval of Instructor

Pre-Calculus courses combine the study of Trigonometry, Elementary Functions, Analytic Geometry, and Math Analysis topics as preparation for calculus. Topics typically include the study of complex numbers; polynomial, logarithmic, exponential, rational, right trigonometric, and circular functions, and their relations, inverse and graphs; trigonometric identities and equations; solutions of right and oblique triangles; vectors; the polar coordinate system; conic sections; Boolean algebra and symbolic logic, mathematical induction; matrix algebra; sequences and series; and limits and continuity.

Statistics and Probability

Course # X02201 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**

Prerequisite: High School Standing or Approval of Instructor

Probability and Statistics courses introduce the study of likely events and the analysis, interpretation, and presentation of quantitative data. Course topics generally include basic probability and statistics: discrete probability theory, odds and probabilities, probability trees, populations and samples, frequency tables, measures of central tendency, and presentation of data (including graphs). Course topics may also include normal distribution and measures of variability.

Trigonometry

Course # X02103 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite:Successful Completion of Algebra II or Approval of Instructor

Trigonometry courses prepare students for eventual work in calculus and typically include the following topics; trigonometric and circular functions; their inverses and graphs; relations among the parts of a triangle; trigonometric identities and equations; solutions of right and oblique triangles; and complex numbers.

General progression of DBSD Mathematics Courses:

Algebra I
Geometry
Algebra II
Trigonometry/ Pre-Calculus
Calculus

Upon teacher recommendation and site administrator approval some students will be advised and scheduled into a General Math course such as Consumer Math Probability and Statistics or AVTEC Math either before or after Algebra II or may take courses in a revised sequence.

Entry point of Pre-Algebra, Algebra I, or Algebra II for incoming 9th grade students is based on teacher recommendation and site administrator approval; additionally, with teacher recommendation and site administrator approval 8th grade students may be considered for Algebra I enrollment.

PHYSICAL EDUCATION/
HEALTH EDUCATION

Graduation Requirement
1.0 Credit PE, 0.5 Credit Health

Anatomy & Physiology

Course # X03054 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Anatomy & Physiology is also listed as a Science course as the course components align with both physical education and science standards.
Anatomy courses present an in-depth study of the human body and biological system. Students study such topics as anatomical terminology, cells, and tissues and typically explore functional systems such as skeletal, muscular, circulatory, respiratory, digestive, reproductive, and nervous systems. Physiology courses examine all major systems, tissues, and muscle groups in the human body to help students understand how these systems interact and their role in maintaining homeostasis. These courses may also cover such topics as cell structure and function, metabolism, and the human life cycle.

Fitness

Course # N08005 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Fitness/Conditioning Activities courses emphasize conditioning activities that help develop muscular strength, flexibility, and cardiovascular fitness.

Health Education

(0.5 credits required)
Course # N08051 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Topics covered within Health Education courses may vary widely, but typically include personal health (nutrition, mental health and stress management, drug/alcohol abuse prevention, disease prevention, and first aid) and consumer health issues. The courses may also include brief studies of environmental health, personal development, and/or community resources.

Physical Education*

(1 credit required can be waived with sports waiver)

Course # N08001 **Grades: 9-12**

Length: 1 Semester **Credit: 0.5**

Physical Education courses provide students with knowledge, experience, and an opportunity to develop skills in more than one of the following sports or activities: team sports, individual/dual sports, recreational sports, and fitness/conditioning activities.

SCIENCE

Graduation Requirement
3 credits (6 semesters)

Anatomy & Physiology

Course # X03054 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Anatomy & Physiology is also listed as a Physical Education/Health Education course as the course components align with both physical education and science standards.
Anatomy courses present an in-depth study of the human body and biological system. Students study such topics as anatomical terminology, cells, and tissues and typically explore functional systems such as skeletal, muscular, circulatory, respiratory, digestive, reproductive, and nervous systems. Physiology courses examine all major systems, tissues, and muscle groups in the human body to help students understand how these systems interact and their role in maintaining homeostasis. These courses may also cover such topics as cell structure and function, metabolism, and the human life cycle.

Biology I

Course # X03051 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Biology courses are designed to provide information regarding the fundamental concepts of life and life processes. These courses include (but are not restricted to) such topics as cell structure and function, general plant and animal physiology, genetics, and taxonomy.

Biology II

Course # X03052 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite:Successful Completion of Biology I or Approval of Instructor

Biology II courses cover biological systems in more detail. Topics that may be explored include cell organization, function, and reproduction; energy transformation; human anatomy and physiology; and the evolution and adaptation of organisms.

Chemistry

Course # X03101 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite:Successful Completion of Algebra I and Enrollment in Algebra II or Approval of Site Administrator

Chemistry courses involve studying the composition, properties, and reactions of substances. These courses typically explore such concepts as the behaviors of solids, liquids, and gases; acid/base and oxidation/reduction reactions; and atomic structure. Chemical formulas and equations and nuclear reactions are also studied.

Earth Science

Course # X03001 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Earth Science courses offer insight into the environment on earth and the earth's environment in space. While presenting the concepts and principles essential to students' understanding of the dynamics and history of the earth, these courses usually explore oceanography, geology, astronomy, meteorology, and geography.

Environmental Science

Course # X03003 **Grades: 9-12**
Length: 1-2 Semesters **Credit: 0.5-1**
Prerequisite: High School Standing or Approval of Instructor

Environmental Science courses examine the mutual relationships between organisms and their environment. In studying the interrelationships among plants, animals, and humans, these courses usually cover the following subjects: photosynthesis, recycling and regeneration, ecosystems, population and growth studies, pollution, and conservation of natural resources.

Forensic Science

Course # X03214 **Grades: 11-12**
Length: 1-2 Semesters **Credit: 0.5-1.0**
Prerequisite: Physical Science and Biology or Approval of Instructor

Forensic Laboratory Science courses involve the application of biological, chemical, and physical science principles to data and physical evidence related to evidence collection and analysis. The courses focus on the application of scientific knowledge and scientific principles to collect, preserve, and analyze evidence in a laboratory setting. Topics may include but are not limited to entomology, forensic anthropology, serology, and fingerprinting.

Geology

Course # X03002 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Geology provides an in-depth study of the forces that formed and continue to affect the earth's surface. Earthquakes, volcanoes, and erosion are examples of topics that are presented.

Life Science

Course # X03099 **Grades: 9-12**
Length: 2 Semesters **Credit: 1**
Prerequisite: High School Standing or Approval of Instructor

Life Science is a comprehensive course which provides a solid foundation for Biology courses. Topics include explanations of cellular structure, respiration, enzymes, genetics, and adaptation. Also included are the structure, function, and care of the human body, as well as concepts of adaptation and survival, conservation, and ecology, drugs and human behavior, and environmental pollution.

Physical Science

Course # X03159 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

Physical Science courses involve study of the structures and states of matter. Typically offered as a survey course, topics include the forms or energy, electromagnetism, wave phenomenon and physical and chemical interactions.

Physics

Course # X03151 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite:Successful Completion of Algebra I and enrollment in Algebra II or Approval of Site Administrator

Physics courses involve the study of forces and law of affecting matter, such as equilibrium, motion, momentum, and the relationships between matter and energy. The study of physics includes examination of sound, light, and magnetic and electric phenomena.

Zoology

Course # X03061 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor; Successful Completion of Biology I is Recommended

Zoology courses provide students with an understanding of animals, the niche they occupy in their environment or habitat, their life cycles, and their evolutionary relationships to other organisms. These courses should also help students develop and awareness and understanding of biotic communities.

SOCIAL STUDIES

Graduation Requirement
3 credits (6 semesters)

Alaska History

(0.5 credits required)
Course # X04105 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Alaska History courses examine the history, politics, economics, society, and/or cultures of one state in the United States. This course may focus primarily on the history of the state or may take an interdisciplinary approach to the contemporary issues affecting it.

Anthropology

Course # X04251 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Anthropology courses introduce students to the study of human evolution with regard to the origin, distribution, physical attributes, environment, and culture of human beings. These courses provide an overview of anthropology, including but not limited to both physical and cultural anthropology.

AP U.S. Government and Politics

Course # X04157 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: Government and U.S. History or Approval of Instructor

Following the College Board's suggested curriculum designed to parallel college-level U.S. Government and Politics courses, this course provides students with an analytical perspective on government and politics in the United States, involving both the study of general concepts used to interpret U.S. politics and the analysis of specific case studies. The course generally covers the constitutional underpinnings of the U.S. government, political beliefs and behaviors, political parties and interest groups, the institutions and policy process of national government, and civil rights and liberties.

AP U.S. History

Course # X04104 **Grades: 11-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: U.S. History or Approval of Instructor

Following the College Board's suggested curriculum designed to parallel college-level U.S. History courses, AP U.S. History courses provide students with the analytical skills and factual knowledge necessary to address critical problems and materials in U.S. history. Students learn to assess historical materials and to weigh the evidence and interpretations presented in historical scholarship. The course examines the discovery and settlement of the New World through the recent past.

Civics

Course # X04161 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Civics examines the general structure and functions of U.S. systems of government, the roles and responsibilities of citizens to participate in the political process, and the relationship of the individual to the law and legal system. This course does not delve to the same degree of

detail into constitutional principles or the role of political parties and interest groups as do comprehensive courses in United States Government.

Economics

Course # X04201 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Economics courses provide students with an overview of economics with primary emphasis on the principles of microeconomics and the U.S. economic system. These courses may also cover topics such as principles of macroeconomics, international economics, and comparative economics. Economic principles may be presented in formal theoretical contexts, applied contexts, or both.

Particular Topics in Geography

Course # X04002 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Particular Topics in Geography courses examine a particular topic in geography, such as physical or cultural geography, or the geography of a particular area or region, rather than provide an overview of the field.

Psychology

Course # X04254 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Psychology courses introduce students to the study of individual human behavior. Course content typically includes (but is not limited to) an overview of the field of psychology, topics in human growth and development, personality and behavior, and abnormal psychology.

Sociology

Course # X04258 **Grades: 9-12**
Length: 1 Semester **Credit: 0.5**
Prerequisite: High School Standing or Approval of Instructor

Sociology courses introduce students to the study of human behavior in society. These courses provide an overview or sociology, generally including (but not limited to) topics such as social institutions and norms, socialization and social change, and the relationships among individuals and groups in society.

U.S. Government

(Required)
Course # X04151 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

U.S. Government Comprehensive courses provide an overview of the structure and functions of the U.S. government and political institutions and examine constitutional principles, the concepts of rights and responsibilities, the role of political parties and interest groups, and the importance of civic participation in the democratic process. These courses may examine the structure and function of state and local governments and may cover certain economic and legal topics.

U.S. History

(Required)
Course # X04101 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

United States History (comprehensive) courses provide students with an overview of the history of the United States, examining time periods from discovery or colonialism through World War II or after. These courses typically include a historical overview of political, military, scientific, and social developments. Course content may include a history of the North American peoples before European settlement.

Western Civilization

Course # X04051 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

This course is designed to give the student a general understanding of those intellectual trends which have flourished in the West from the fourteenth century through the dawn of the 21st century. Our focus is primarily European although peripheral issues which take us outside the Continent will be considered as well. The general theme which holds the course together is what I call the "world view," that is, the collection of mental constructs which gives the world meaning to each and every one of us. Our task is to uncover and investigate world views as they appear throughout this 700-year block of time. In the end, you will have an excellent grasp of what is meant by the expression, the "Western intellectual tradition," and this is important because that tradition is also your tradition.

World History

Course # X04051 **Grades: 9-12**
Length: 2 Semesters **Credit: 1.0**
Prerequisite: High School Standing or Approval of Instructor

World History courses provide students with an overview of the history of human society from early civilization to the contemporary period, examining political, economic, social, religious, military, scientific, and cultural developments. World History courses may include geographical studies, but often these components are not as explicitly taught as geography.

UAF High School Advantage - Online

DBSD has joined with UAF to offer all courses available through their online dual credit High School Advantage program to high school students enrolled in DBSD schools. Please talk with your guidance counselor and principal if you are interested in taking any of these courses. To find out more about this program visit https://ecampus.uaf.edu/highschool/. These dual credit courses can be used for graduation credits in the appropriate subject area.

**All courses offered 100% online require specific documentation, for courses listed above variations to the naming and numbering system may occur. The district Skyward Help Desk can provide individual schools guidance in setting this up at time of enrollment, please contact them for assistance if you have any questions concerning online courses.

Contacting the Denali Borough School District

Have questions? Need assistance? Do you need help working through a concern about district procedures?
First, talk to the person involved, to the teacher, or the site administrator about the situation. If the problem cannot be solved at the school, call the appropriate administrative office:

Website: www.dbsd.org

Superintendent Bill Burr P.O. Box 280 Healy, AK 99743 Phone: (907) 683-2278 FAX: (907) 683-2514	**Anderson School** Terri Schuetz P.O. Box 280 Healy, AK 99743 Phone: (907) 683-2278 FAX: (907) 683-2514
Director of Learning and Instruction Karen Martin	**Tri-Valley School** Tobe Gurley

P.O. Box 280 Healy, AK 99743 Phone: (907) 683-2267	Principal P.O. Box 400 Healy, AK 99743 Phone: (907) 683-2267 FAX: (907) 683-2632
Denali PEAK Correspondence/Homeschool Garin Martin Principal 4240 Old Seward #4 Anchorage, AK 99503 Phone: (907) 563-0990	**Cantwell School** Jamie Wollman Principal Teacher P.O. Box 29 Cantwell, AK 99729 Phone: (907) 768-2372 FAX: (907) 768-2500
Special Education Director Federal Programs Terri Schuetz P.O. Box 280 Healy, AK 99743 Phone: (907) 683-2278 FAX: (907) 683-2514	

This district website contains a wealth of information regarding the Denali Borough School District including board meeting minutes, the district policy manual, the Strategic Plan, email addresses, and many other helpful pieces of information.

Citizen complaint forms are available at school offices.

DBSD COURSE PROPOSAL

Course Title: Personal Finance Grade Level(s): 9 - 12

Course Information: ___ Semester or _X_ Year _X_ Elective or ___ Required

Prerequisite(s): Algebra 1 or Equivalent or Instructor Approval

Subject Area: Math, Social Studies, Career & Technical

Proposed By: Tri-Valley School, Tobe Gurley and Stephanie Stickle

Building Administrator Approval: _____ _____
Signature Date

Complete the information above and submit to the Curriculum Director, with a completed proposal. Your completed proposal should address each of the following components:

1. Rationale. (How does this support the goals of our district? What gap(s) in the current curriculum are filled by this pilot course?
2. Course description. (Approximately one paragraph.)
3. Learning objectives. (Include correlations to AKSS and other applicable standards. CTE courses should have Career/Industry standard objectives)
4. Course syllabus and content outline.
5. Textbooks, Student-Issued Learning Materials and/or Instructional Resources to be used. (Are these materials currently adopted or available?)
6. Cost of course start-up, if applicable. (i.e. Equipment, training etc.)
7. APS Course approval form, if applicable

Do not write below this line; for Curriculum Department use only

Curriculum Committee Recommendation: _____ Date: _____

This course is: ___ Approved to Pilot ___ Fully Approved ___ Not Approved

Curriculum Director: _____ Date: _____

Superintendent: _____ Date: _____

This course is: ___ Approved to Pilot ___ Fully Approved ___ Not Approved

Course Notes: _____

1. Rationale. (How does this support the goals of our district? What gap(s) in the current curriculum are filled by this pilot course?

   Personal Finance supports preparing students for life after high school. Course goals emphasize college and career readiness, civic responsibility, and the development of critical-thinking and problem-solving skills. Financial literacy is a foundational competency that integrates all three priorities. Students who understand budgeting, credit, investing, taxes, and consumer rights are better equipped to make informed decisions as adults, contributing positively to both their personal well-being and the economic health of their communities. A personal finance course provides a route for every graduate to be better prepared and to have the tools to navigate both local and national financial systems.

   A review of the current courses and graduation requirements reveals the following gaps that this course is designed to fill:

   - A dedicated financial literacy course: While mathematics courses include some budgeting and percent calculations, and social studies courses address broad economic principles, no existing course provides a systematic, practical treatment of personal financial skills.
   - Opportunity for applied consumer skills instruction: This course provides formal instruction on such things as insurance products, credit scores, loan comparisons, tax filing, or investment vehicles—of which students will encounter after graduation.
   - Bridge between academic math and real-world application: Students capable of solving algebraic equations will apply those skills to concepts such as compound interest; loan repayment, payoff, or paying off; or paycheck deductions.
   - Graduation readiness gap: Financial management is a skill gap among recent high school graduates.

2. Course description. (Approximately one paragraph.)

   Personal Finance is an elective course designed to equip high school students in grades 9–12 with the practical knowledge and decision-making skills needed to manage their financial lives successfully. Through a combination of direct instruction, real-world simulations, case studies, project-based learning, and technology-based tools, students will explore core personal finance topics including income and career planning, budgeting and spending, saving and investing, credit and debt management, insurance and risk management, taxation, consumer rights, and giving and philanthropy. Special attention may be given to Alaska-specific financial contexts, including the Permanent Fund Dividend, rural cost-of-living considerations, and regional economic opportunities. This course is

designed to complement and reinforce skills developed in mathematics and social studies while providing a unique applied context that prepares students for the financial realities of adult life in Alaska and beyond.

3. Learning objectives. (Include correlations to AKSS and other applicable standards. CTE courses should have Career/Industry standard objectives)

Upon successful completion of this course, students will be able to:

Learning Objectives:

- Analyze sources of income and evaluate career pathways relative to long-term financial goals.
- Create, monitor, and adjust a personal budget using income and expense tracking tools.
- Apply mathematical concepts—including percentages, ratios, and compound interest—to real-world financial scenarios.
- Evaluate the costs and benefits of saving, investing, and borrowing across multiple time horizons.
- Interpret credit reports, calculate credit scores, and demonstrate strategies for building and protecting credit.
- Compare types of loans, mortgages, and financial products to make informed borrowing decisions.
- Explain the purpose and mechanics of taxes, complete a basic tax return, and identify key deductions and credits.
- Identify types of insurance coverage (health, auto, renters/homeowners, life) and select appropriate risk management strategies.
- Describe investment vehicles including savings accounts, stocks, bonds, mutual funds, and retirement accounts.
- Apply consumer protection knowledge to identify fraud, deceptive practices, and legal rights as a consumer.
- Construct a personal financial plan integrating short-term and long-term goals.

Alaska Content Standards – Mathematics:

This course addresses the following Alaska Mathematics Standards:

Number & Quantity – Quantities (N-Q)

- N-Q.1 – Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

- N-Q.2 – Define appropriate quantities for the purpose of descriptive modeling.
- N-Q.3 – Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Algebra – Seeing Structure in Expressions (A-SSE)

- A-SSE.1 [Specific Modeling Standard] – Interpret expressions that represent a quantity in terms of its context, including parts of an expression such as terms, factors, and coefficients.
- A-SSE.3 [Specific Modeling Standard] – Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented, including using properties of exponents to transform expressions for exponential functions.
- A-SSE.4 [Specific Modeling Standard] – Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems.

Algebra – Creating Equations (A-CED)

- A-CED.1 – Create equations and inequalities in one variable and use them to solve problems, including equations arising from linear and exponential functions.
- A-CED.2 – Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
- A-CED.3 – Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
- A-CED.4 – Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

Algebra – Reasoning with Equations and Inequalities (A-REI)

- A-REI.3 – Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Functions – Interpreting Functions (F-IF)

- F-IF.4 [Specific Modeling Standard] – For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.
- F-IF.5 [Specific Modeling Standard] – Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- F-IF.6 [Specific Modeling Standard] – Calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph.

- F-IF.7 [Specific Modeling Standard] – Graph functions expressed symbolically and show key features of the graph, including exponential and logarithmic functions showing intercepts and end behavior.
- F-IF.8 – Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function, including using properties of exponents to interpret expressions for exponential functions.

Functions – Building Functions (F-BF)

- F-BF.1 [Specific Modeling Standard] – Write a function that describes a relationship between two quantities, including determining an explicit expression or recursive process from a context.
- F-BF.2 [Specific Modeling Standard] – Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
- F-BF.4. Find inverse functions.
- F-BF-5: Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

Functions – Linear, Quadratic, and Exponential Models (F-LE)

- F-LE.1 – Distinguish between situations that can be modeled with linear functions and with exponential functions, including recognizing situations where a quantity grows or decays by a constant percent rate.
- F-LE.2 – Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or input-output table of values.
- F-LE.3 – Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or as a polynomial function.
- F-LE.5 – Interpret the parameters in a linear or exponential function in terms of a context.

Statistics & Probability – Interpreting Categorical and Quantitative Data (S-ID)

- S-ID.1 – Represent data with plots on the real number line (dot plots, histograms, and box plots).
- S-ID.2 – Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more data sets.
- S-ID.3 – Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
- S-ID.5 – Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data, including joint, marginal, and conditional relative frequencies.

- S-ID.6 – Represent data on two quantitative variables on a scatter plot, and describe how the variables are related; fit a function to the data and use it to solve problems in context.
- S-ID.7 – Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
- S-ID.9 – Distinguish between correlation and causation.

Statistics & Probability – Making Inferences and Justifying Conclusions (S-IC)

- S-IC.6 – Evaluate reports based on data.

Statistics & Probability – Using Probability to Make Decisions (S-MD)

- S-MD.5 [College-Ready] – Weigh the possible outcomes of a decision by assigning probabilities to payoff values and finding expected values; evaluate and compare strategies on the basis of expected values.

Mathematical Modeling

- Modeling [Specific Modeling Standards throughout] – Modeling links classroom mathematics to everyday life, work, and decision-making. Students will identify variables, formulate models, compute solutions, interpret results, validate conclusions, and report reasoning across all units. Financial planning, savings account growth, loan amortization, and investment comparisons are primary modeling contexts for this course.

Alaska Math Standards Summary Table

Standard	Cluster	Personal Finance Topic
N-Q.1, .2, .3	Quantities	Units, accuracy, income & rate conversions
A-SSE.1, .3, .4	Seeing Structure in Expressions	Interest formulas, mortgage payments
A-CED.1, .2, .3, .4	Creating Equations	Budgets, savings goals, cost constraints
A-REI.3	Reasoning with Equations	Loan, tax, and paycheck calculations
F-IF.4, .5, .6, .7, .8	Interpreting Functions	Savings & debt curves, growth rates
F-BF.1, .2, .4, .5	Building Functions	Savings models, amortization sequences
F-LE.1, .2, .3, .5	Linear & Exponential Models	Compound interest, early investing
S-ID.1, .2, .3, .5, .6, .7, .9	Interpreting Data	Income data, cost-of-living comparisons
S-IC.6	Making Inferences	Evaluating financial reports
S-MD.5	Probability & Decisions (College-Ready)	Insurance policy comparison

Alaska Content Standards – Social Studies:

This course addresses the following Alaska Social Studies Standards:

Anchor Standard 11 – Economic Systems, Models, and Markets (partial)

- SS.9-12.11.4 – Explain the roles of buyers and sellers in product, labor, and financial markets.
- SS.9-12.11.8 – Compare and contrast private and public sector roles in a market economy.

Anchor Standard 12 – Decision-Making and Personal Finance (all standards)

- SS.9-12.12.1 – Explain the various types of currency.
- SS.9-12.12.2 – Examine the opportunities for earning income, including wages/salaries, commissions, benefits, asset development, and dividends.
- SS.9-12.12.3 – Relate the way that intangible job benefits can affect a person's personal life, career choices, and income.
- SS.9-12.12.4 – Identify different types of jobs, career sectors, business and nonprofit development opportunities, and other opportunities to personally contribute in the economic workforce.
- SS.9-12.12.5 – Calculate tax contributions to local, state, and federal governments and describe the benefits that the taxes may provide to individual and societal structures.
- SS.9-12.12.6 – Assess the economic advantages of saving in a personal account and other long- and short-term investment accounts.
- SS.9-12.12.7 – Assess the effects of inflation on a personal finance portfolio, including the effects on income, spending, and saving.
- SS.9-12.12.8 – Investigate ways that personal information is fraudulently obtained.
- SS.9-12.12.9 – Prepare a budget or spending plan that depicts varying sources of income, a planned saving strategy, taxes, and other sources of fixed and variable spending.
- SS.9-12.12.10 – Evaluate options for payment on credit cards and the consequences of each option.
- SS.9-12.12.11 – Describe how a credit score impacts the ability to borrow money and at what rate.
- SS.9-12.12.12 – Calculate the total cost of repaying a loan under various rates of interest and over different time periods.
- SS.9-12.12.13 – Explain various types of insurance and the purpose of using insurance to protect financial interests.

Alaska Economics Standards Summary Table:

Standard	Anchor Standard	Personal Finance Topic
SS.9-12.11.4, .11.8	11 – Economic Systems, Models & Markets	Labor & financial markets; public vs. private sector
SS.9-12.12.1	12 – Decision-Making & Personal Finance	Types of currency

Standard	Anchor Standard	Personal Finance Topic
SS.9-12.12.2–.4	12 – Decision-Making & Personal Finance	Income, job benefits, career pathways
SS.9-12.12.5	12 – Decision-Making & Personal Finance	Tax calculation and public benefits
SS.9-12.12.6–.7	12 – Decision-Making & Personal Finance	Saving, investing, and inflation
SS.9-12.12.8	12 – Decision-Making & Personal Finance	Identity theft and financial fraud
SS.9-12.12.9	12 – Decision-Making & Personal Finance	Budgeting and spending plans
SS.9-12.12.10–.12	12 – Decision-Making & Personal Finance	Credit cards, credit scores, loan costs
SS.9-12.12.13	12 – Decision-Making & Personal Finance	Insurance and risk management

Alaska Career Clusters Pathway:

Based on the National Career Clusters® Framework (Modernized, Advance CTE), this course aligns with the following career clusters and sub-clusters:

Financial Services – Cluster Grouping: Investing in the Future

The Financial Services Career Cluster encompasses careers in managing and advising financial transactions, including banking, lending, corporate finance, debt management, accounting, insurance, and real estate. This course provides foundational knowledge across all five sub-clusters:

- Accounting – Personal finance advising, financial planning, debt management, and interpreting financial records.
- Banking & Credit – Money management, loans, creditworthiness evaluation, and understanding banking products and services.
- Financial Strategy & Investments – Stocks, bonds, mutual funds, retirement accounts, and personal investment planning.
- Insurance – Risk assessment, life, health, auto, and property insurance products and policy selection.
- Real Estate – Mortgages, property transactions, and related financial and legal considerations.

Management & Entrepreneurship – Cross-Cutting Cluster: Connecting & Supporting Success

The Management & Entrepreneurship Cluster involves skills essential across all industries, including business administration, strategic planning, and entrepreneurship. The following sub-clusters are applicable:

- Entrepreneurship & Small Business – Business plan development, managing business finances, identifying opportunities, and securing financing.
- Leadership & Operations – Personal financial decision-making, resource allocation, and goal-setting aligned with financial planning.

- Regulation – Consumer protection laws, financial compliance, rights and responsibilities of borrowers and account holders.

Alaska Employability Skills:

This course addresses the Alaska Content Standards for Employability (Alaska Department of Education & Early Development):

Standard A – A student should be able to develop and use employability skills in order to effectively make the transition from school to work and lifelong learning.

- A.2 – Understand how to apply skills and academic knowledge in a variety of work settings.
- A.4 – Understand the process for developing self-employment opportunities including marketing studies, business plan development, and managing business finances.
- A.5 – Understand how an individual job fits into the overall organization and how the organization fits into the overall economy.

Standard B – A student should be able to identify career interests and plan for career options.

- B.1 – Identify and appreciate personal interests, aptitudes, abilities, and priorities.
- B.2 – Identify possible career options, considering both employment and self-employment, and understand how changes in the workplace affect career choice.
- B.3 – Use labor market information to identify occupational and economic trends and opportunities, and evaluate possible career options.
- B.4 – Identify education and/or training needed for career options and advancement, and develop a career plan.

4. Example/Recommended Course syllabus and content outline.

Course Outline:

Topic 1: Financial Foundations, Career Planning & Math in Personal Finance

- Introduction to personal finance and the personal financial planning process
- Values, goals, and consumer economic decision-making frameworks
- Math in personal finance: percentages, ratios, interest calculations, and interpreting financial data
- Income types: wages, salary, tips, commissions, benefits, dividends, Alaska PFD
- Employee compensation components: base pay, benefits, retirement contributions, paid leave, and non-monetary perks
- Career exploration: the relationship between education, training, skills, and earning potential

- Cost of education and training: comparing college, trade school, apprenticeships, and military pathways
- Reading and interpreting a pay stub: gross vs. net pay, deductions, and withholdings

Example Assessments: Values & Goals reflection; Pay stub analysis; Career and education pathway comparison activity

Topic 2: Budgeting, Spending & Financial Recordkeeping

- Needs vs. wants; opportunity cost and consumer economic trade-offs
- Creating a personal budget: the 50/30/20 rule and zero-based budgeting methods
- Creating a family budget: accommodating multiple income sources, dependents, and shared expenses
- Fixed, variable, and discretionary expenses
- Cost of living comparison: urban vs. rural Alaska
- Tracking spending with digital tools and spreadsheets
- Financial statements and recordkeeping: income statements, net worth statements, and organizing personal financial records
- Consumer decision-making: advertising literacy, price comparison, and unit pricing

Example Assessments: Personal budget project (simulated income scenario); Family budget scenario activity; Cost of living comparison

Topic 3: Banking Products, Services & Saving

- Types of financial institutions: banks, credit unions, online banks, and Alaska-specific options
- Banking products and services: checking accounts, savings accounts, money market accounts, CDs, debit cards, mobile banking, and wire transfers
- Selecting the right banking products: comparing fees, interest rates, access, and FDIC/NCUA insurance
- Financial statements and recordkeeping: balancing a checkbook, reading bank statements, and maintaining personal financial records
- Simple and compound interest calculations; the Rule of 72
- Saving strategies: short-term goals, long-term goals, and emergency funds
- The importance of liquid savings and automating saving habits

Example Assessments: Bank account comparison chart; Compound interest math problems; Bank statement reconciliation activity

Topic 4: Credit, Borrowing Basics & Debt Management

- Borrowing basics: how credit works, the cost of borrowing, and the difference between good and bad debt
- The 5 C’s of credit; how lenders evaluate borrowers

- Types of credit: credit cards, personal loans, student loans, auto loans, payday loans, and lines of credit
- Evaluating credit card payment options and the true cost of carrying a balance
- Reading a credit report; the FICO scoring model
- Strategies for building, protecting, and repairing credit
- True cost of debt: APR, minimum payments, and loan amortization
- Predatory lending practices; Alaska-specific concern: high-cost rural lending and financial scams

Example Assessments: Credit report simulation activity; Credit card payment comparison; Loan cost analysis project

Topic 5: Major Purchases – Cars, Homes & Education

- Car-buying basics: new vs. used, financing vs. leasing, total cost of ownership, depreciation, and dealer negotiation
- Auto loan calculations: comparing interest rates, loan terms, and monthly payments
- Home-buying basics: the home-buying process from pre-approval to closing
- Home-buying language: key terms including mortgage, escrow, down payment, PMI, appraisal, title, and closing costs
- Comparing renting vs. buying: financial and lifestyle considerations in Alaska communities
- Cost of education and training revisited: student loans, grants, scholarships, and managing education debt
- Calculating the total cost of repaying loans under varying interest rates and time periods

Example Assessments: Car-buying simulation scenario; Rent vs. buy comparison analysis; Home loan total cost calculation

Topic 6: Saving, Investment Strategies & Retirement Planning

- Investment fundamentals: risk, return, liquidity, time horizon, and diversification
- Saving and investment strategies: matching strategy to goals and risk tolerance
- Types of investments: savings bonds, CDs, stocks, bonds, mutual funds, ETFs, and index funds
- Effects of inflation on income, spending, saving, and investment portfolio value
- Retirement and estate planning: why to start early, the power of compound growth
- Retirement accounts: 401(k), 403(b), IRA, Roth IRA; employer matching and contribution limits
- Estate planning basics: wills, beneficiaries, powers of attorney, and advance directives
- Stock market simulation (classroom investment game or online simulator)

Example Assessments: Investment options comparison matrix; Stock market simulation; Retirement savings projection activity

Topic 7: Taxes & Government

- Taxes and government: the purpose of taxation and how tax revenue funds public services at local, state, and federal levels
- Understanding personal taxes: types of taxes (income, payroll, sales, property, excise)
- Federal income tax: brackets, taxable income, standard vs. itemized deductions, and tax credits
- Alaska state tax structure: no state income tax; borough sales and property taxes
- Understanding key tax forms: W-2, W-4, 1099, and 1040
- Completing a simulated basic federal tax return (Form 1040)
- Tax contributions to local, state, and federal government and the benefits they fund
- Free tax preparation resources: VITA program and IRS Free File

Example Assessments: Simulated tax return completion; Tax form identification activity; Tax system analysis reflection

Topic 8: Insurance, Personal Risk Management & Consumer Protection

- Personal risk management: strategies of avoidance, reduction, transfer, and acceptance
- Insurance basics overview: the purpose of insurance, how premiums are set, and how claims work
- Insurance basics – Automobile: liability, collision, comprehensive, uninsured motorist, and Alaska requirements
- Insurance basics – Health: plan types (HMO, PPO, HDHP), premiums, deductibles, copays, coinsurance, out-of-pocket maximums
- Insurance basics – Home & Property: homeowners vs. renters insurance, coverage types, and Alaska-specific considerations
- Insurance basics – Life & Disability: term vs. whole life, disability income insurance, and determining coverage needs
- Insurance basics – Making claims: the claims process, documentation, working with adjusters, and avoiding fraud
- Comparing insurance plans and selecting appropriate coverage for different life stages
- Consumer rights and protections: CFPB, FTC, Truth in Lending Act, Fair Credit Reporting Act
- Protecting against identity theft and financial fraud; investigating how personal information is fraudulently obtained

Example Assessments: Insurance plan comparison scenario; Risk management case study; Consumer protection scenario analysis

Topic 9: Personal Financial Planning & Capstone Projects

- The personal financial planning process: assessing current financial position, setting goals, and creating an action plan
- Synthesizing all course concepts into a comprehensive personal financial plan
- Contracts, warranties, and resolving consumer disputes
- Charitable giving, social responsibility, and community financial well-being
- Portfolio assembly and peer review

Example Assessments: Personal Financial Plan (capstone project); Financial Literacy Portfolio submission

Capstone Projects:

As the culminating assessment for this course, each student will develop a comprehensive Personal Financial Plan that addresses the following components:

- Personal financial goals (short-term, mid-term, long-term)
- Projected post-graduation income, career plan, and education/training pathway
- Monthly personal budget based on projected income
- Savings and emergency fund plan
- Credit strategy and debt avoidance/management plan
- Major purchase planning: car, housing (rent vs. buy analysis)
- Basic investment and retirement savings plan with timeline
- Insurance needs assessment across all coverage types
- Tax awareness summary: estimated tax obligations and key filing requirements
- Reflection: financial values, giving plan, and estate planning awareness

The plan will be presented to the class and submitted as the anchor document in the student's Financial Literacy Portfolio. Evaluation will be based on a provided rubric emphasizing completeness, mathematical accuracy, realistic assumptions, and quality of reasoning.

Additional Project/Product Ideas are included below:

Project Title	Project Description	Tangible Products
My First Budget Blueprint *4–5 weeks*	Students simulate adult life by choosing a post-graduation scenario (renting an apartment, attending college, or entering the workforce). They research real costs, build a monthly budget, and present a	• Annotated monthly budget spreadsheet • Written financial narrative (2–3 pages)

Project Title	Project Description	Tangible Products
	financial "survival plan" to a panel of community judges including a local banker or credit counselor.	• Presentation slides + panel Q&A • Reflection journal on trade-offs made
Credit Score Decoded *3–4 weeks*	Students investigate how credit scores are calculated, why they matter, and what behaviors build or destroy credit. They create an educational resource (video, infographic, or zine) designed to teach peers about responsible credit use, then distribute it within the school community.	• Peer-facing infographic, video, or zine • Research report with cited sources • Credit score simulation activity for peers • Distribution/outreach plan
Invest in Your Future: Stock Market Challenge *5–6 weeks*	Using a virtual stock market simulator, student teams are each given a $10,000 hypothetical portfolio. They research companies, analyze market trends, make investment decisions over several weeks, and present their portfolio performance and strategy to a mock "board of directors."	• Virtual investment portfolio log • Weekly market analysis memos • Final portfolio performance report • Board presentation with Q&A defense
Adulting 101: Taxes & Paychecks Unpacked *3–4 weeks*	Students decode their first paycheck by analyzing gross vs. net pay, deductions, and tax withholdings. They then complete a simulated tax return using sample income scenarios, and produce an "Adulting Guide" chapter on taxes for incoming juniors.	• Annotated sample paycheck analysis • Completed simulated tax return • "Adulting Guide" chapter (designed & printed) • Short explainer video or podcast episode
Dream Big, Plan Smart: College & Career Cost Analysis *4–5 weeks*	Students research the true cost of their post-graduation path — whether college, trade school, military, or work — including tuition, student loans, earning potential, and ROI over 10 years. They build a personal financial road map and pitch it to a mentor or counselor as if applying for a scholarship.	• 10-year personal financial road map • Loan repayment calculator model • Scholarship pitch letter or video • Comparative cost analysis chart

5. Textbooks, Student-Issued Learning Materials and/or Instructional Resources to be used. (Are these materials currently adopted or available?)

   Textbooks: Kapoor, Focus on Personal Financial Literacy, High School Edition, ©2024, 1e

   Core Instructional Resource: NGPF (Next Gen Personal Finance) – free, standards-aligned curriculum: ngpf.org

Additional Instructional Resources:

- EverFi Financial Literacy – free digital platform for schools: everfi.com
- Jump$tart Financial Literacy Clearinghouse: jumpstart.org
- IRS Understanding Taxes – free tax education program: apps.irs.gov/app/understandingTaxes
- Consumer Financial Protection Bureau (CFPB) Youth Financial Education resources: consumerfinance.gov
- Khan Academy Personal Finance: khanacademy.org

6. Cost of course start-up, if applicable. (i.e. Equipment, training etc.)

   Purchasing textbooks.

7. APS Course approval form.

DBSD COURSE PROPOSAL

Course Title: STEM Career Exploration / Design and Fabrication

Grade Level(s): 9-12

Course Information: __X_ Semester or __X_ Year __X_ Elective or ____ Required

Prerequisite(s): None Subject Area: Career Technical

Proposed By: Tri-Valley School Tobe Gurley and Mark Martin
School Teacher

Building Administrator Approval: _____ _____
Signature Date

Complete the information above and submit to the Curriculum Director, with a completed proposal. Your completed proposal should address each of the following components:

1. Rationale. (How does this support the goals of our district? What gap(s) in the current curriculum are filled by this pilot course?
2. Course description. (Approximately one paragraph.)
3. Learning objectives. (Include correlations to AKSS and other applicable standards. CTE courses should have Career/Industry standard objectives)
4. Course syllabus and content outline.
5. Textbooks, Student-Issued Learning Materials and/or Instructional Resources to be used. (Are these materials currently adopted or available?)
6. Cost of course start-up, if applicable. (i.e. Equipment, training etc.)
7. APS Course approval form, if applicable

Do not write below this line; for Curriculum Department use only

Curriculum Committee Recommendation: _____ Date: _____

This course is: ____ Approved to Pilot ____ Fully Approved ____ Not Approved

Curriculum Director: _____ Date: _____

Superintendent: _____ Date: _____

This course is: ____ Approved to Pilot ____ Fully Approved ____ Not Approved

Comments/Notes: _____

Rationale. (How does this support the goals of our district? What gap(s) in the current curriculum are filled by this pilot course?

This course supports district strategic plan goals of offering more career technical experiences for students. It is designed to provide opportunities for students to explore specific career clusters and to determine their interests in these potential career pathways. Current CTE courses are focused on single pathways. This course will allow students to experience several different career options related to STEM. It is designed to be flexible to student interests as cohorts change.

There isn't a current CTE course specific to aspects of design, manufacturing, fabrication, drone piloting, unmanned vehicle development and programming, and other shorter term experiential introductions to many different STEM trades based on student interest.

Course description. (Approximately one paragraph.)

This class will delve into many aspects found in career and technical education including digital and nondigital design and manufacturing, UGV and UAV development and programing, as well as short experiential introductions to many trades. Grades will be based on completion of required portfolio requirements for a quarter credit.

Students will explore and develop skills in the following topics: Entrepreneurship, logistics, communication, customer service, AutoCad and digital design, production and finishing, quality assurance, unmanned vehicle development and programming hardware and software, drone development and piloting.

Collaboration and Teamwork; Fundamentals of the Design Process; Manual and CAD drawing, Problem--Solving; Safe use of tools in material processing; Modeling; Troubleshooting Process.

Learning objectives. (Include correlations to AKSS and other applicable standards. CTE courses should have Career/Industry standard objectives)

Industry Standards for STEM

- OSHA: www.osha.gov/dte/outreach/maritime/index.html
- NCCER: www.nccer.org/findCenter.asp
- AutoCad: www.usa.autodesk.com/adsk
- ISTE: www.iste.org/standards.aspx
- ITEA: www.itea.org

Common Core Technical Core Relevant Practices and Standards

Career Ready Practices

- Practice 1. Act as a responsible and contributing citizen and employee.
- Practice 2. Apply appropriate academic and technical skills.
- Practice 4. Communicate clearly, effectively and with reason.
- Practice 6. Demonstrate creativity and innovation.
- Practice 8. Utilize critical thinking to make sense of problems and persevere in solving them.
- Practice 11. Use technology to enhance productivity.
- Practice 12. Work productively in teams while using cultural/global competence.

Manufacturing Career Cluster™(MN) Standards

- MN 1. Evaluate the nature and scope of the Manufacturing Career Cluster and the role of manufacturing in society and in the economy.
    - Students will explore career opportunities in MN fields.
- MN 2. Analyze and summarize how manufacturing businesses improve performance.
    - Students will evaluate their production processes for improving performance and production.
- MN 3. Comply with federal, state and local regulations to ensure worker safety and health and environmental work practices.
    - Students will recognize safety as a value while developing safe work habits.
    - Students will demonstrate the safe use of small hand and power tools while processing materials.
- MN 4. Describe career opportunities and means to achieve those opportunities in each of the Manufacturing Career Pathways.
    - Students will explore career opportunities in MN fields.
- MN 6. Demonstrate workplace knowledge and skills common to manufacturing.
    - Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

Science, Technology, Engineering & Mathematics Career Cluster™ (ST)

- ST 1. Apply engineering skills in a project that requires project management, process control and quality assurance.
    - Students will use both 2D & 3D CAD software and hardware. For example: Autocad, Fusion360, Tinkercad, 3D printers, Laser Engraver, etc.
    - Students will understand and apply the technology & engineering design process, including troubleshooting, research, development, invention, innovation, and experimentation.

    - Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.
    - Students develop, test, and refine prototype designs as part of a cyclical design process.
    - Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

- ST 3. Describe and follow safety, health and environmental standards related to science, technology, engineering and mathematics (STEM) workplaces.
    - Students will recognize safety as a value while developing safe work habits.
    - Students will demonstrate the safe use of small hand and power tools while processing materials.
    - Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

- ST 4. Understand the nature and scope of the Science, Technology, Engineering & Mathematics Career ClusterTM and the role of STEM in society and the economy.
    - Students will develop an understanding of some types of technologies.
    - Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.

- ST 5. Demonstrate an understanding of the breadth of career opportunities and means to those opportunities in each of the Science, Technology, Engineering & Mathematics Career Pathways.
    - Students will explore career opportunities in STEM fields.

- ST 6. Demonstrate technical skills needed in a chosen STEM field.
    - Students will understand and apply the technology & engineering design process, including troubleshooting, research, development, invention, innovation, and experimentation.
    - Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.
    - Students develop, test, and refine prototype designs as part of a cyclical design process.

Engineering & Technology Career Pathway (ST-ET)

- ST-ET 1. Use STEM concepts and processes to solve problems involving design and/or production.

- Students will understand and apply the technology & engineering design process, including troubleshooting, research, development, invention, innovation, and experimentation.
- Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.
- Students develop, test, and refine prototype designs as part of a cyclical design process.
- Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

- ST-ET 2. Display and communicate STEM information.
  - Students will communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing and/or through oral presentations.

- ST-ET 3. Apply processes and concepts for the use of technological tools in STEM.
  - Students will demonstrate the safe use of small hand and power tools while processing materials.
  - Students will use both 2D & 3D CAD software and hardware. For example: Autocad, Fusion360, Tinkercad, 3D printers, Laser Engraver, etc.
  - Students will understand and apply the technology & engineering design process, including troubleshooting, research, development, invention, innovation, and experimentation.
  - Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.
  - Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

- ST-ET 4. Apply the elements of the design process.
  - Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.
  - Students develop, test, and refine prototype designs as part of a cyclical design process.

- ST-ET 5. Apply the knowledge learned in STEM to solve problems.
  - Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.
  - Students develop, test, and refine prototype designs as part of a cyclical design process.

- ST-ET 6. Apply the knowledge learned in the study of STEM to provide solutions to human and societal problems in an ethical and legal manner.
    - Students will use problem-solving, teamwork, and management skills to complete a problem or task successfully. Students will present solutions and information both inside and outside of classrooms.
    - Students develop, test, and refine prototype designs as part of a cyclical design process.
    - Students contribute constructively to project teams, assuming various roles and responsibilities to work effectively toward a common goal.

Student Performance Standards	Alaska English / Language Arts Standards	Alaska Math Standards	Alaska Science Standards	Alaska Cultural Standards	Employability/ Career Readiness Standards
English Language Arts Standards					
11-12.7 Students will integrate and evaluate multiple sources of information presented in, diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.	Alaska English Language Arts Standards: Reading Standards for Literacy in Science and Technical Subjects				
11-12.7 Students will integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.	Alaska English Language Arts Standards: Reading Standards for Informational Text				
9-10.2; 11-12.2 Students will write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.	Alaska English Language Arts Standards:Writing Standards				

9-10.6 Students will use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.	Alaska English Language Arts Standards:Writing Standards				
11-12.6 Students will use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	Alaska English Language Arts Standards:Writing Standards				
9-10.3 Students will follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.	Alaska English Language Arts Standards: Reading Standards for Literacy in Science and Technical Subjects				
11-12.3 Students will follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specfi i c results based on explanations in the text.	Alaska English Language Arts Standards: Reading Standards for Literacy in Science and Technical Subjects				

9-10. 4 Students will determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.	Alaska English Language Arts Standards: Reading Standards for Literacy in Science and Technical Subjects				
11-12.4 Students will determine the meaning of symbols, key terms, and other domain-specific words, and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.	Alaska English Language Arts Standards: Reading Standards for Literacy in Science and Technical Subjects				
Science, Engineering, and Technology					
Students will ask questions (for science) and define problems (for engineering).			Alaska Science Standards: Scientific and Engineering Practices		
Students will develop and use models			Alaska Science Standards: Scientific and Engineering Practices		
Students will plan and carry out investigations.			Alaska Science Standards: Scientific and Engineering Practices		

Students will analyze and interpret data			Alaska Science Standards: Scientific and Engineering Practices		
Students will construct explanations (for science) and design solutions (engineering).			Alaska Science Standards: Scientific and Engineering Practices		
Students will obtain, evaluate, and communicate information.			Alaska Science Standards: Scientific and Engineering Practices		
Students will analyze cause and effect: mechanism and explanation.			Alaska Science Standards: Science Crosscutting Concept		
Students will utilize Engineering Design ● Define and Delimit an Engineering Problem ● Develop Possible Solutions ● Optimize the Design Solution			Alaska Science Standards: Engineering, Technology, and the Applications of Science		

Students will explore links among Engineering, Technology, Science, and Society ● Interdependence of Science, Engineering, and Technology ● Influence of Engineering, Technology, and Science on Society and the Natural World			Alaska Science Standards: Engineering, Technology, and the Applications of Science		
Employability Standards					
Students will develop and maintain a work ethic necessary for success in the workplace that includes honesty, integrity, dependability, punctuality, self-discipline, initiative, reliability, accuracy, productivity, respect, and perseverance.					Alaska Employability Standard A
Students will understand how to apply skills and academic knowledge in a variety of work settings.					Alaska Employability Standard A
Students will understand the process for developing self-employment opportunities including business plan developmen, and managing business finances.					Alaska Employability Standard A
Students will understand the need for safe practices in workplaces.					Alaska Employability Standard A
Students will identify and appreciate personal interests, aptitudes, abilities, and priorities.					Alaska Employability Standard B

Students will identify possible career options, considering both employment and self employment.					Alaska Employability Standard B
Students will understand education and/or training needed for career options related to STEM and Manufacturing clusters.					Alaska Employability Standard B
Cultural Standards					
Culturally-knowledgeable students are able to build on the knowledge and skills of the local cultural community as a foundation from which to achieve personal and academic success throughout life.				Alaska Cultural Standards for Students	
Mathematics					
Students will link mathematics and statistics to everyday life, work, and decision-making. Students will use a modeling process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions.		Alaska High School Mathematical Standards Conceptual Category-Modeling			
Students will use the basic modeling cycle to identify a problem, formulate a model, analyze and perform operations to compute, interpret results, validate conclusions, and report on conclusions and reasoning.		Alaska High School Mathematical Standards Conceptual Category-Modeling			

Course syllabus and content outline.

Design and Fabrication Lab Syllabus

Course Description: This course introduces students to the principles and practices of design and fabrication. Students will learn various design techniques, tools, and materials used in the field of fabrication, with a focus on hands-on projects.

Course Goals:

- Understand the design process from concept to production.
- Develop skills in using design software and fabrication tools.
- Learn about different materials and their properties.
- Gain practical experience through hands-on projects for authentic customers.
- Employability skills

Course Overview:

Introduction to Design and Fabrication

- Overview of design and fabrication
- Introduction to design software (e.g., CAD)
- Coding in the C++ language
- Safety in the workshop

Design Principles

- Elements and principles of design
- Design thinking and problem-solving

Materials and Tools

- Introduction to various materials (wood, metal, plastic) and their use in fabrication
- Tools and machinery used in fabrication

Fabrication Techniques

- Cutting, shaping, and joining materials
- Finishing techniques (sanding, painting, etc.)

Project-Based Learning

- Students will work on individual and group projects applying the concepts learned in class.
- Drone construction and flight requirements (manual and autonomous)

Business Basics

- Budgeting
- Pricing
- Creating invoices
- Customer relationship management
- Employability skills
- Students will present their projects, discussing their design process and fabrication techniques used.

Assessment:

- Customer satisfaction
- Portfolio - credit/no credit

Resources:

- State and federal standards
- Design software: Lightburn, Fusion360, Illustrator, Arduino
- MINDSi robotics materials and curriculum
- Workshop tools and machinery

Note: This syllabus is a suggested outline and is subject to change based on the needs of the students and the instructor.

Textbooks, Student-Issued Learning Materials and/or Instructional Resources to be used. (Are these materials currently adopted or available?)

See above.

Cost of course start-up, if applicable. (i.e. Equipment, training etc.)

N/A - Already invested in materials.

APS Course approval form, if applicable