AI Literacy

Definition

AI literacy is a set of competencies enabling individuals to understand, use, evaluate, and critically reflect on artificial intelligence technologies. It includes four interconnected dimensions—understanding AI, using and applying AI, evaluating and creating with AI, and using AI ethically—requiring not only technical skill but also the critical thinking and ethical judgment to determine when and how AI should be used.

In Computing

In computing education, AI literacy helps students use AI as a learning partner rather than as a shortcut for completing assignments. For Computer Science (CS) students, this means learning how to ask AI for explanations, debug code responsibly, compare model responses, test suggestions, and identify what they still do not understand. These practices support students' development as reflective programmers who can learn with changing technologies while maintaining academic honesty and professional integrity. Teaching AI literacy in early computing courses therefore means equipping students to evaluate AI outputs critically, recognize their own knowledge gaps, and cultivate the dispositions that distinguish learning from copying.

AIL Approach

This OER introduces AI literacy through three short lesson modules designed for CS classrooms. Each module combines discussion, scenario-based reflection, hands-on prompting, AI-supported debugging, and written or oral reflection. Students do not simply learn how to get better answers from AI; they learn how to use AI in ways that strengthen understanding, expose knowledge gaps, and support long-term growth as computing learners.

The modules may be used as a sequence or adapted individually. The lesson plans for the modules listed below can be found in the attachment.

1. **Prompt Engineering and Building Character Virtues:** Students compare effective and ineffective prompts, sign or reflect on an honesty contract, and practice using AI to ask beginner-level programming questions.

2. **AI Model Comparison and Being a Lifelong Learner:** Students compare outputs from different AI tools, evaluate debugging explanations, and build a transferable evaluation framework.

3. **Advanced Prompting and Strengthening Character Traits:** Students practice chain-of-thought-style prompting, iterative refinement, and persona prompting while reflecting on honesty, humility, courage, and integrity.

Considerations to use the modules:

- Class context (CS1 or CS2? What programming language? What prior AI exposure do students have?)
- Time available (Single session, multi-week sequence, or embedded mini-activity?)
- Character trait focus (Single virtue, or layered combination across modules?)
- Assessment method (Reflection logs, prompt portfolios, peer evaluation, or scenario-based questions?)
- AI tools permitted (One designated tool, or open comparison across models?)

Theoretical Perspective

AI literacy in computing draws on two complementary levers. The first is the competency-based literacy framework articulated by Long and Magerko (2020) and further developed by Ng et al. (2021), which positions AI

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literacy as the ability to critically evaluate, communicate with, use AI tools, and engage with AI ethics. The second is virtue epistemology, which argues that education should cultivate intellectual character traits as essential to genuine learning (Baehr, 2013). These dimensions converge in the CS2023 curriculum's competency model, which formally integrates knowledge, skills, and dispositions (ACM/IEEE-CS/AAAI, 2024), echoing recent computing-education research on professional dispositions in undergraduate students (Tagare et al., 2023; McCauley et al., 2023). Together, these perspectives reframe AI literacy not as a technical add-on but as a disposition-rich competency, i.e. students must learn not only *how* to use AI, but *who* they are becoming as learners and professionals when they do.

Attachment 1: Module #1 / Students discuss their AI use, compare different uses of AI through a scenario, complete an honesty contract, and practice writing prompts that ask AI to explain programming concepts rather than simply produce answers.

Attachment 2: Module #2 / Students use different AI tools to analyze a buggy C++ function, compare the quality of model responses, and develop a personal framework for evaluating learning resources such as AI tools, documentation, tutorials, and Stack Overflow answers.

Attachment 3: Module #3 / Students practice improving prompts through baseline prompting, chain-of-thought-style prompting, iterative refinement, and persona prompting. They also reflect on honesty, intellectual humility, courage, and integrity as part of responsible AI-supported learning.

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