



Generate Interest by Integrating Discipline-Specific Ways of Thinking

Discipline-specific ways of thinking are those thought processes and skills that are essential to the students' success in future courses and careers within your discipline. Although each course may have countless discipline-specific ways of thinking, it is important to integrate those that will most benefit students in their continued learning both in your course, in subsequent courses, and in their careers (Pallas & Neumann, 2019).

Discipline-Specific Ways of Thinking and Critical Thinking Skills

One of the benefits to integrating discipline-specific ways of thinking is that it often allows you to teach critical thinking skills within your subject area (Miller, 2014). In *Minds Online* (2014), Michelle Miller writes that you can begin the process of integrating discipline-specific ways of thinking by exploring the kinds of critical thinking used to solve problems that are typical for your course.

The chart below provides examples of discipline-specific approaches in reading, writing, and thinking for various disciplines (Lent, 2017).

	Read	Write	Think
Science	<p>When scientists read, they</p> <ul style="list-style-type: none"> • Ask "Why?" more than "What?" • Interpret data, charts, and illustrations • Seek to understand concepts as well as words • Determine validity of sources and quality of evidence • Pay attention to details 	<p>When scientists write, they</p> <ul style="list-style-type: none"> • Use precise vocabulary • Compose in phrases, bullets, graphs, or sketches • Use passive voice • Favor exactness over craft or elaboration • Communicate in a systematic form 	<p>When scientists think, they</p> <ul style="list-style-type: none"> • Tap into curiosity to create questions • Rely on prior knowledge or research • Consider new hypotheses or evidence • Propose explanations • Create solutions
History	<p>When historians read, they</p> <ul style="list-style-type: none"> • Interpret primary and secondary sources • Identify bias • Think sequentially • Compare and contrast events, accounts, documents, and visuals • Determine meaning of words within context 	<p>When historians write, they</p> <ul style="list-style-type: none"> • Create time lines with accompanying narratives • Synthesize information/evidence from multiple sources • Emphasize coherent organization of ideas • Grapple with multiple ideas and large quantities of information • Create essays based on argumentative principles 	<p>When historians think, they</p> <ul style="list-style-type: none"> • Create narratives • Rely on valid primary and secondary sources to guide their thinking • Compare and contrast or ponder causes and effects • Consider big ideas or inquiries across long periods of time • Recognize bias
Math	<p>When mathematicians read, they</p> <ul style="list-style-type: none"> • Use information to piece together a solution • Look for patterns and relationships • Decipher symbols and abstract ideas • Ask questions • Apply mathematical reasoning 	<p>When mathematicians write, they</p> <ul style="list-style-type: none"> • Explain, justify, describe, estimate, or analyze • Favor calculations over words • Use precise vocabulary • Include reasons and examples • Utilize real-word situations 	<p>When mathematicians think, they</p> <ul style="list-style-type: none"> • Consider patterns • Utilize previous understandings • Find connections • Estimate, generalize, and find exceptions • Employ mathematical principles



English Language Arts	When students of English read, they <ul style="list-style-type: none"> • Understand how figurative language works • Find underlying messages that evolve as a theme • Assume a skeptical stance • Pay attention to new vocabulary or words used in new ways • Summarize and synthesize 	When students of English write, they <ul style="list-style-type: none"> • Engage in a process that includes drafting, revising, and editing • Use mentor texts to help them with the craft of writing • Pay attention to organization, details, elaboration, and voice • Rely on the feedback of others • Avoid formulaic writing 	When students of English think, they <ul style="list-style-type: none"> • Reflect on multiple texts • Ask questions of the author • Consider research or others' ideas • Discuss ideas and themes • Argue both sides of a point
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Sources

Lent, R. (2017). *Disciplinary literacy: A shift that makes sense*. ASCD. <https://www.ascd.org/el/articles/disciplinary-literacy-a-shift-that-makes-sense>

Miller, M. D. (2014). *Minds online: Teaching effectively with technology*. Harvard University Press.

Pallas, A. M., & Neumann, A. (2019). *Convergent teaching: Tools to spark deeper learning in college*. Johns Hopkins University Press.