



AIM Institute for Learning & Research

Evaluating K–5 Knowledge-Building Literacy

A guide for K–5 teams to evaluate how literacy curricula help students build knowledge, language, and comprehension

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Comprehension Is Built, Not Just Practiced

Many literacy programs claim to be research-based, but that alone is not enough. K–5 review teams should ask: Does the program help students build and use the knowledge, language, and reasoning they need to understand more complex texts?

Reading comprehension is not a single skill. It develops when readers combine accurate reading with vocabulary, syntax, knowledge of text structure, world knowledge, inference, and monitoring their understanding. These elements help readers build a clear mental model of what a text means, not just what it says. If any part is weak, comprehension can suffer, and practicing general strategies alone cannot make up for missing language or knowledge (Hennessy, 2021; Oakhill et al., 2015).

This paper focuses on knowledge building and language comprehension, but these are only part of a full literacy program. Strong K–5 programs also teach phonemic awareness, phonics, decoding, spelling, and fluency, and provide support when needed. The key question is how well these basics work together with vocabulary, syntax, text structure, knowledge, inference, and monitoring. Building knowledge adds to foundational skills; it does not replace them (Foorman et al., 2016; Shanahan et al., 2010).

This paper offers a framework for reviewing programs. It explains why comprehension relies on knowledge, points out what to look for in units and lessons, and shows the difference between real knowledge-building and activities that only seem research-based. The framework also explains how this work should look different in K–2 compared to grades 3–5.

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Why Knowledge Matters for K–5 Comprehension

The importance of knowledge is most obvious when readers need to make inferences. Inference is more than just “reading between the lines”; it means connecting words, sentences, larger parts of the text, and what you already know. Research points to two types of coherence inference that work together during comprehension (Kendeou et al., 2008; Oakhill et al., 2015):

- **Local coherence inferences.** These connect words, clauses, and adjacent sentences. For example, resolving a pronoun, interpreting a connective, or bridging one proposition to the next. They depend on precise word meanings, syntax, and close attention to relationships within the text; with proficiency, many become increasingly efficient and automatic.
- **Global coherence inferences.** These connect information across larger portions of a text and supply relationships an author leaves unstated. Readers integrate explicit evidence with relevant knowledge from long-term memory to explain causes, motives, implications, and the text’s larger meaning.

Both types are needed. Readers make sense of text by connecting information within and across sentences and by checking their understanding against language, text structure, and what they already know. Good comprehension depends on using knowledge, vocabulary, syntax, memory, inference, and the habit of noticing and fixing misunderstandings (Hennessey, 2021; Oakhill et al., 2015).

Kim and Cao’s (2025) meta-analysis provides strong evidence that content knowledge is a consequential and teachable contributor within this multicomponent system. Across 108 correlational studies involving 68,301 participants, content knowledge was meaningfully associated with comprehension ($r = .41$). Across 55 intervention studies involving 18,540 participants, instruction produced large gains in knowledge ($g = 1.36$) and meaningful gains in reading comprehension ($g = .44$).

The same study found that knowledge-activation interventions had a larger effect on comprehension ($g = .66$) than knowledge-building interventions ($g = .19$). However, this does not mean one is more important than the other. Activation studies were usually short and focused on specific texts, whereas knowledge-building studies examined longer-term effects and used broader measures. So, these results reflect different situations, not a direct comparison of which is better.

The best approach is to do both: curricula should help students build lasting knowledge and give them chances to use, connect, test, and update that knowledge as they read. Students cannot activate knowledge they have not learned, and unused knowledge does not help comprehension. Good materials show both processes throughout a unit, not just before reading.

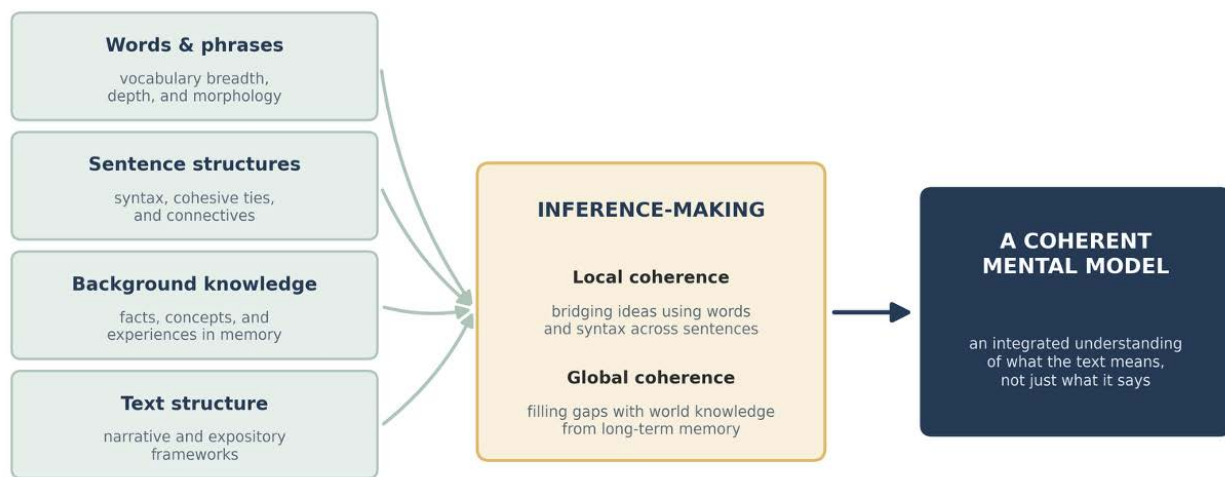
This is why teaching only strategies has limits. Questioning, summarizing, visualizing, and using graphic organizers can help, but they do not teach new vocabulary, fill in knowledge gaps, or show how ideas connect within a subject. Strategy instruction works best when it is part of rich, connected

reading and when students gradually take more responsibility. Research supports focusing on knowledge, vocabulary, syntax, inference, text structure, and monitoring of understanding, rather than practicing strategies out of context (Duke et al., 2021; Elleman & Oslund, 2019).

For curriculum review, this means that knowledge-building is a key part of teaching comprehension and should be evaluated alongside foundational reading instruction.

How Readers Build a Coherent Mental Model

Comprehension emerges when language, knowledge, and inference-making work together



When any element is missing — unfamiliar vocabulary, dense syntax, absent background knowledge — comprehension strategies alone cannot compensate.

Based on Oakhill, Cain, & Elbro (2015); Hennessy (2021)

Figure 1. *Comprehension as mental model construction: language, knowledge, and inference-making working together.*

A K–5 Evaluation Framework: The ABCs of Background Knowledge

The ABCs of Background Knowledge — Activate and Assess, Build, and Connect — work best as an ongoing process rather than just a step before reading (Hennessy, 2021). How these steps look should change as students grow. In K–2, oral language, read-alouds, visuals, and simple texts help build knowledge while students learn to read words. In grades 3–5, students should read, compare, and combine connected texts independently, with extra help if decoding or fluency remains challenging.

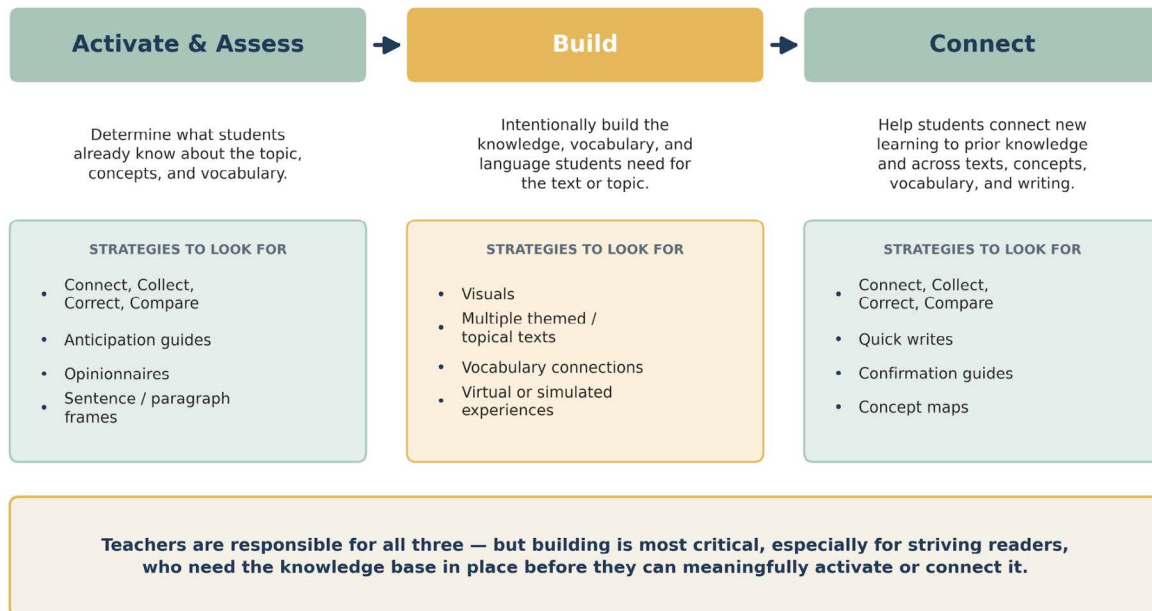
- **Activate and assess.** Do materials help teachers surface relevant knowledge, language resources, and misconceptions before and during reading? Look for diagnostic prompts, purposeful discussion, anticipation and confirmation routines, and opportunities for students to explain what they think and why.
- **Build.** Does the program deliberately teach the concepts, vocabulary, experiences, and text knowledge students need? Look for coherent text sets, explicit language instruction, purposeful visuals, demonstrations, and planned experiences that create access without removing the intellectual work of reading.
- **Connect.** Do students use new information to extend, complicate, or correct earlier understanding across texts? Look for concept maps, cumulative discussion, cross-text writing, synthesis tasks, and structured opportunities to revise claims in light of evidence.

Teachers need to do all three steps, but building background knowledge is the most important, especially for students who struggle. Students need a knowledge base before they can use or connect it. Simply asking what they know is not the same as teaching them what they need; a quick activation before reading is not enough.

The framework also carries an equity dimension because differences in background knowledge significantly affect how well students understand texts. This is especially important for students from different cultures or language backgrounds, whose experiences may not match those in the curriculum. Good programs help teachers recognize and use students' knowledge, culture, beliefs, and experiences, prepare for unfamiliar topics, and include texts with many perspectives so every student can connect and understand. Students enter classrooms with extensive cultural and linguistic knowledge, family and community experiences, and established ways of making sense of the world. These “funds of knowledge” influence what students notice, the connections they make, and the inferences they draw. A strong curriculum therefore does more than include diverse texts; it helps teachers recognize and use students' existing knowledge as a bridge to new academic and disciplinary learning (Hattan & Lupo, 2020).

The ABCs of Background Knowledge

An evaluation framework: does the curriculum help teachers do all three?



Framework: AIM Institute for Learning & Research

Figure 2. *The ABCs of Background Knowledge as a curriculum evaluation framework.*

Students should continue to use their knowledge as they read. They need help not just before reading, but also while reading and when they need to update their understanding in response to new or different information in the text. Good curricula show this process through discussion, writing, concept maps, and chances to compare first ideas with new evidence. In short, background knowledge is used and updated throughout reading, not just before it (Hattan & Lupo, 2020).

Content-Integrated Literacy, Not Isolated Strategy Practice

Review teams should not judge a curriculum just by whether it includes questioning, summarizing, or graphic organizers. These strategies and good text choices help, but what matters is how they are used. The best programs teach strategies as tools for understanding real content, connect texts, revisit key vocabulary and ideas, and ask students to use what they have learned in discussion and writing. Research-based routines are not enough if the curriculum is not well organized (Duke et al., 2021; Murphy et al., 2009; Shanahan et al., 2010).

Look at whole units, not just sample lessons. A strong sequence is built around important topics, concepts, or questions. Later texts build on or challenge earlier knowledge, vocabulary is repeated and deepened, and final tasks ask students to combine information from different sources.

A broad theme is not enough; it is better to organize real texts around a big topic so students can become experts as they read and explore related texts. If you can remove or reorder major texts without changing what students learn, the program is focused on completing activities rather than building knowledge (Cabell & Hwang, 2020).

Intentional Vocabulary and Morphology Across K–5

Vocabulary is the foundation for precise knowledge. Good curricula choose a manageable set of important academic and subject-specific words, explain them clearly, connect them to ideas and other words, and have students use them often in speaking, reading, and writing. They also help students learn new words independently by using context, word parts, and word relationships. The goal is depth, repeated use, and understanding, not just teaching lots of words (Stahl & Fairbanks, 1986; Wright & Cervetti, 2017).

The research needs careful reading. Teaching vocabulary helps most with understanding texts that use those words; there is less evidence that it helps with other texts. This means instruction should connect and revisit words across a unit, not just teach long lists. Teaching about word parts (morphology) can support word knowledge, spelling, and literacy, especially when it is integrated into other lessons rather than taught in isolation (Bowers et al., 2010; Wright & Cervetti, 2017).

For multilingual learners, effective vocabulary instruction includes clear academic language, easy-to-understand explanations, visual and contextual support, purposeful conversation, and opportunities to connect similar words and ideas across languages. Materials should expect some language to be new but should not treat multilingualism as a problem or lower the content. Reviewers should look for ongoing chances for students to hear, discuss, read, and write important words in real contexts (Baker et al., 2014).

Check unit plans for a clear set of important academic and subject words, clear routines for teaching meaning, word parts, and word relationships, and repeated use in speaking, reading, discussion, and writing. Assessments should ask students to use words to explain ideas. Watch out for vocabulary that is only copied once, not connected to the unit, or only tested by matching words to definitions.

If you can remove or reorder major texts without changing what students learn, the program is focused on completing activities rather than building knowledge.

Coherent Text Sets, Visuals, and Experiences

A curriculum should not assume students already know every concept a text requires. Effective programs anticipate unfamiliar knowledge and provide enough conceptual and linguistic support for students to engage with the text while keeping reading as the primary way to learn. Materials should show four design features:

- **Vocabulary connections.** New words should serve as conceptual anchors, linking students' existing knowledge to the distinctions and relationships the unit develops.
- **Purposeful experiences.** Virtual tours, demonstrations, media, and other planned experiences can provide relevant access when students have not encountered a topic directly, provided they prepare students to learn from, not bypass, the text.
- **Purposeful visuals.** Images, diagrams, maps, and demonstrations should build access to unfamiliar concepts and support observation, prediction, and explanation — not just decorate the lesson.
- **Coherent text sets.** Texts across genres and sources should form a cumulative line of inquiry in which each selection adds, complicates, or tests knowledge developed earlier.

Look at the whole unit sequence. Teacher materials should show what knowledge and language each text needs. Later lessons should build on earlier learning, and final tasks should ask students to compare or combine information from different sources. Having many texts does not make a unit coherent. The real test is whether the sequence changes what students know, can figure out, and can explain.

Text Structure, Language, and Inference

Building knowledge also means understanding language and text structure. Students need clear help with complex sentences, linking words, pronouns, and the organization of stories and information texts. These features show how ideas connect within and across texts. Teaching should make these connections clear in the texts students read and link them to the unit's main ideas, rather than teaching them on separate worksheets (Duke et al., 2021).

Instruction in cohesive devices and connectives such as however, therefore, and meanwhile supports local coherence. For global inference, four mutually reinforcing practices deserve scrutiny:

1. Purposeful questioning sequences move students from locating evidence to connecting ideas, explaining relationships, evaluating claims, and synthesizing across texts.

2. Visual evidence, such as pictures, diagrams, maps, and models, can support inference when prompts require students to connect what they observe with language, knowledge, and textual evidence.
3. Think-alouds make otherwise hidden reasoning visible: identifying clues, integrating relevant knowledge, monitoring coherence, and revising an interpretation when evidence conflicts.
4. Graphic representations should make reasoning visible rather than become an end in themselves. A useful scaffold is the *text says + I know = therefore I infer*, followed by an evaluation of whether the inference is warranted.

In K–5, reviewers should look for a clear path from teacher modeling and guided discussion to students working more independently — monitoring, explaining, comparing, and combining ideas. Tasks should ask students to use evidence from texts and their own knowledge and to revise their answers when new evidence emerges. Be cautious of programs that ask for inferences but do not teach how to use language, evidence, and knowledge together to make a strong inference.

Conclusion: The Governing Test Is Cumulative Learning

A strong K–5 literacy curriculum does two main things. It teaches students to read words accurately and automatically through clear instruction in basic skills, and it helps them build the language, knowledge, and reasoning needed to understand more complex texts. Knowledge-building works when concepts and vocabulary build up across units, later lessons depend on earlier learning, and students use what they know in reading, discussion, writing, and assessment.

The main standard for review teams is clear but challenging: by the end of a unit, students should know more, express more, read more deeply, and write with stronger evidence than they did at the start. The curriculum should clearly show, step by step, how its texts, lessons, tasks, and assessments led to this growth.

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Key Takeaways:

Comprehension is a coordinated system, not a skill. It emerges when readers integrate decoding, vocabulary, syntax, text structure, world knowledge, inference, and monitoring into a coherent mental model.

Knowledge is teachable and consequential. Kim and Cao's (2025) meta-analysis links content knowledge to comprehension ($r = .41$) and shows instruction produces large knowledge gains ($g = 1.36$) and meaningful comprehension gains ($g = .44$).

Activation and building are complementary, not ranked. Curricula must both develop a durable knowledge base and repeatedly prompt students to retrieve, connect, test, and revise it while reading.

Evaluate whole units, not sample lessons. Coherence lives in how a unit accumulates, in the text sets that build vocabulary and the tasks that demand synthesis, not merely in the strategies or organizers a program happens to include.

The ABCs (Activate/Assess, Build, Connect) are a recurring cycle, not a prereading routine and should shift developmentally from K–2 oral-language and read-aloud work toward independent cross-text synthesis in grades 3–5.

Knowledge-Building Curriculum REVIEW CHECKLIST



An effective, research-based knowledge-building curriculum should include:



Coherent, content-rich units

A coherent sequence of units organized around meaningful topics, concepts, or essential questions.



The ABCs of background knowledge

Opportunities to activate, assess, build, and connect background knowledge — with genuine knowledge-building, not just activation.



Vocabulary & morphology

Explicit academic vocabulary and morphology instruction, with multiple meaningful exposures across reading, discussion, and writing.



Schema-building resources

Multiple themed texts, visuals, and experiences — including virtual ones — that build schema.



Language & text structure

Instruction in sentence comprehension, cohesive ties, connectives, inference-making, and narrative and expository text structure.



Access for diverse learners

Support for culturally and linguistically diverse learners that opens access to rigorous content rather than reducing it.



Knowledge assessment tools

Tools for teachers to assess background knowledge before instruction.



Student talk & writing

Opportunities for students to speak, write, compare, confirm, correct, and connect ideas across a unit.



During vendor demonstrations and pilots, ask to see the evidence in the actual teacher and student materials — not the marketing claims — and prioritize repeated evidence across units over isolated examples.

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A practical checklist for K–5 curriculum review teams, vendor demonstrations, and pilot evaluations.

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- Frameworks referenced throughout — the ABCs of Background Knowledge, word-conscious classrooms, and knowledge-building strategies — draw on AIM Institute for Learning & Research professional learning materials, including Pathways to Proficient Reading.



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