

Overview of the K.L.I. Intervention (DRAFTv5_July 2022)

Link to [IES Grant Project Description](#)¹

What is the *Building Reading Comprehension through Knowledge, Language, and Inquiry* (abbreviated K.L.I.) intervention?

K.L.I. is a multi-component reading comprehension intervention intended for small-group instruction with English learners (ELs) facilitated by specialist teachers (e.g., ESL teachers, literacy specialists, and classroom teachers with expertise in working with multilingual students). As indicated in its name, K.L.I. has three distinct features that make it particularly suited for English learners in the upper-elementary grades. First, the intervention is *knowledge-focused*. It takes advantage of the strong relationship between content knowledge and reading comprehension processes. To build a mental model of a text, readers activate and expand what they know about the topic, resulting in new knowledge and perspectives that can inform future reading. Second, the intervention is *language-focused*. This means it explicitly targets the areas of language proficiency that are needed for successful text comprehension in ELs, including vocabulary, morphology, syntax, and text structure. Finally, the instruction provided during K.L.I. is *inquiry-focused*. The intervention components are organized around compelling content-area questions that students answer as they engage in structured reading and language activities. This approach provides opportunities for readers to be experts and creators of new knowledge through their engagement with interesting texts and topics.

Content Area Topics

Each K.L.I. module focuses on a different topic. The five topics used in the current implementation of K.L.I. are: *Robots*, *Space Pollution*, *A New Home (Immigrant Experiences)*, *Voting in a Democracy*, and *Animal Communication*. Each module begins with open-ended inquiry questions (e.g., *how have humans solved challenges by advancing robotic technology?*)

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that serve as a catalyst for student thinking as they read and work as a group to collect new ideas in a digital inquiry space, which they synthesize at the end of the module into a brief informal presentation to share with peers and teachers.

K.L.I. Components

The K.L.I. intervention consists of five evidence-based components. Each component is an instructional practice that teachers implement using books, texts, and other materials provided as part of the intervention training.

- **Discovery Reading (DR):** Students read portions of an authentic text and engage in a structured discussion, framed around a question/purpose that helps students build a mental model of the text. They also closely examine high-leverage words that are essential for understanding the text.
- **Confident Reading (CR):** Students practice fluency by repeatedly reading a series of short expository texts on the inquiry topic, each increasing in complexity, with teacher modeling and feedback.
- **Uncover the Structure (UtS):** Using a short text that was previously read and discussed during Confident Reading, the teacher guides the students in a discussion of the structure/organization of the author's ideas.
- **Breaking Words (BW):** Students engage in a structured word analysis routine using multisyllabic academic words that relate to inquiry topics.
- **Sentence Workshop (SW):** Students use word cards to build, rearrange, and discuss the structure of complex sentences related to the inquiry topic.

Inquiry Space

While engaging in the five components above, students identify new ideas and concepts that address their inquiry question and add these to the Inquiry Space at the end of each lesson. The Inquiry Space provides teachers and students with a centralized place to record, collect, and synthesize new knowledge. This space is a resource for students to refer back to throughout each module as they prepare for their final presentations.

Design-Based Approach to Building the K.L.I. Intervention

The components of the intervention were designed through repeated design-implement-observe-revise cycles, in collaboration with expert teachers, beginning with Version 0 (v0) of each component and ending with the current version (v5). The research team will continue revising and improving the K.L.I. materials over the remainder of this project. This document and the accompanying teachers' manuals reflect the v5 materials that were developed as follows:

- **Design/Review:** The research team developed the v0 materials of all five components (three in Year 1; two in Year 2). Teachers reviewed the v0 materials and provided feedback and suggestions for improvement during teacher review interviews. The team revised and refined the v0 materials.

- **Implement/Observe:** Teacher collaborators implemented v1, v2, v3, and v4 of each component with small groups of students. They provided their feedback in teacher review interviews. Researchers recorded/observed and rated the quality of the materials using observation checklists (implementation maps) aligned with the theory of change.
- **Revise:** After each implementation, the team revised the materials based on teachers’ recommendations and observations. After multiple iterations of design-implement-revise phases, the team completed v5 materials.

Structure of a Typical Module

Full implementation of one K.L.I. module takes approximately 16 hours of instructional time, spread over several weeks. The frequency of each component in a full module is shown in Table 1.

Table 1: Components in a Full K.L.I. Module

Component	Abbreviation	Frequency
Discovery Reading	DR	12 sessions
Confident Reading	CR	9 sessions
Breaking Words	BW	6 sessions
Sentence Workshop	SW	6 sessions
Uncover the Structure	UTS	3 sessions
Inquiry Space	IS	3 sessions

These sessions can be spread out in different ways depending on the campus schedule. For example, if there is a 45-60 minute block for small-group intervention, we recommend a 17-day schedule as shown in Table 2.

Table 2: A Full Module Implemented in 17 Multi-Component Sessions

Day	Components Taught		
Day 0	Intro/Preview		
Day 1	DR Lesson A	CR Lesson A	BW Lesson A
Day 2	DR Lesson B	CR Lesson B	SW Lesson A
Day 3	DR Lesson C	CR Lesson C	BW Lesson B
Day 4	DR Lesson D	UTS Lesson A	SW Lesson B
Day 5	Inquiry Space	Catch-up	

Day 6	DR Lesson E	CR Lesson D	BW Lesson C
Day 7	DR Lesson F	CR Lesson E	SW Lesson C
Day 8	DR Lesson G	CR Lesson F	BW Lesson D
Day 9	DR Lesson H	UTS Lesson B	SW Lesson D
Day 10	Inquiry Space	Catch-up	
Day 11	DR Lesson I	CR Lesson G	BW Lesson E
Day 12	DR Lesson J	CR Lesson H	SW Lesson E
Day 13	DR Lesson K	CR Lesson I	BW Lesson F
Day 14	DR Lesson L	UTS Lesson C	SW Lesson F
Day 15	Inquiry Space	Catch-Up	
Day 16	Share and celebrate new knowledge		

If the time for each small-group meeting is shorter, a module can be implemented in 40 meetings lasting 15-20 minutes each, as shown in Table 3.

Table 3: A Full Module Implemented in 40 Shorter Sessions

Day 0: Intro/Preview		
Day 1: DR Lesson A	Day 2: CR Lesson A	Day 3: BW Lesson A
Day 4: DR Lesson B	Day 5: CR Lesson B	Day 6: SW Lesson A
Day 7: DR Lesson C	Day 8: CR Lesson C	Day 9: BW Lesson B
Day 10: DR Lesson D	Day 11: UTS Lesson A	Day 12: SW Lesson B
Day 13: Inquiry Space		
Day 14: DR Lesson E	Day 15: CR Lesson D	Day 16: BW Lesson C
Day 17: DR Lesson F	Day 18: CR Lesson E	Day 19: SW Lesson C
Day 20: DR Lesson G	Day 21: CR Lesson F	Day 22: BW Lesson D
Day 23: DR Lesson H	Day 24: UTS Lesson B	Day 25: SW Lesson D
Day 26: Inquiry Space		
Day 27: DR Lesson I	Day 28: CR Lesson G	Day 29: BW Lesson E
Day 30: DR Lesson J	Day 31: CR Lesson H	Day 32: SW Lesson E
Day 33: DR Lesson K	Day 34: CR Lesson I	Day 35: BW Lesson F
Day 36: DR Lesson L	Day 37: UTS Lesson C	Day 38: SW Lesson F

Day 39: Inquiry Space

Day 40: Share and celebrate new knowledge

Big Ideas that Inform the Intervention Design

Like all evidence-based interventions, K.L.I. is built on theory and prior research. A few of the important ideas that inform the design of the intervention are summarized here.

- The K.L.I. intervention is conceptualized as a system of activity—a configuration of knowledge, experiences, training, lesson plans, materials, routines, and discussion norms that, as a system, create and sustain learning opportunities for children. The theory of change that informs K.L.I. (see section below and Figure 1) specifies the four cultural practices in which English learners should have sustained engagement for growth in reading comprehension. These are: 1) Reflecting on language, 2) Purposeful and accurate reading, 3) Discussing texts to gain new knowledge, and 4) Explicating metacognitive processes.
- K.L.I. is intended to move students toward increased levels of independence in these cultural practices through repeated use of carefully scaffolded, fast-paced instruction during multi-component lessons. (See sections below about scaffolding student independence and maximizing learning opportunities.)
- Reading comprehension is defined in K.L.I. as the merging of text-communicated ideas (both explicit and implicit) with one’s own knowledge and experiences to construct a coherent mental model of the text, resulting in new knowledge and perspectives that can be applied elsewhere.
- Comprehension relies on the accumulation and orchestration of multiple competencies. The competencies explicitly targeted in K.L.I. are: English language knowledge, reading fluency, content area knowledge, and comprehension processes.
- Skilled word reading is necessary for reading comprehension. However, K.L.I. does not include explicit instruction in phonics and word reading because most schools already have many options for evidenced-based interventions in this foundational area. K.L.I. targets knowledge and skills that are crucial for comprehension development for which schools often have fewer intervention options.
- Comprehension strategies instruction is shown in many studies to be effective, but alone, strategies are insufficient unless readers have the requisite language and content knowledge to form mental models of the text.
- In K.L.I., comprehension strategies are conceptualized as metacognitive processes that help readers build a coherent mental model of the ideas in a text. The specific processes targeted are: comprehension monitoring, paraphrasing or thinking aloud, self-questioning, and selectively attending to important ideas.
- K.L.I. is organized in thematic modules to help students systematically activate and build new knowledge on the topics they are reading.

- Comprehension, especially for ELs, depends on language knowledge at multiple levels, including vocabulary, morphology, syntax, and organizational structures of texts.
- Instruction that supports English language development for ELs should be explicit and structured to maximize student learning, but it should not be linguistically prescriptive (telling students how they should speak) or subtractive (trying to replace home languages and dialects with academic language).
- By virtue of being multilingual, English learners have unique language assets that enable them to notice and reflect on English language structures in complex and interesting ways. Throughout K.L.I., there are multiple places where students can link new words they are learning to similar words in their home languages or to explain their learning to their peers in their own words, which for many, might involve home language use. Teachers, even those who may not speak students' home languages, should encourage students to leverage their existing language assets. (See section below about linguistic equity.)

Scaffolding Student Independence Over Time

Across the lessons in a module, teachers implement K.L.I. components using a *gradual release of responsibility* (GRR) approach. In the beginning as students are learning the K.L.I. routines, or in the early days of a new module when students are just getting acquainted with the topic, high levels of teacher modeling and think-alouds are required. Over time, responsibility is gradually released to the students to lead the discussion and take turns with one another in practicing each routine.

In addition to GRR, another important concept that applies to K.L.I. is *proleptic teaching* (or in simpler terms, future-oriented teaching). This form of teaching is centered on an anticipation of the students' future competence--that is, an assumption that the student will know and be able to do something later that they cannot do in the present. Their future competence builds over time, as a result of having repeated and expertly scaffolded opportunities to participate to the best of their ability. In the present, not everyone will be able to participate in the same ways. Some students will already know some of the content and be able to engage easily in the conversation. Others will be less familiar with the content, and they will require additional scaffolding to push their participation forward. Some students will talk more and some will listen more. This is acceptable and expected. Different forms of participation are valuable. By allowing students to do what they can in the present, and by providing the right level of scaffolding that pushes them further one small bit at a time, students will become more competent in the future. These changes will happen little by little (imagine tiny layers of competence building up on top of each other over many small opportunities for participation).

Maximizing Learning through Fast-Paced Routines

The future-oriented way of thinking about student learning motivates the fast-paced nature of the K.L.I. intervention. By keeping the intervention moving quickly, students are given more opportunities to engage with text and language, distributed across multiple examples, to build up their competence over time. They do not need to understand everything at every stopping point

within a component. In fact, when teachers try to elaborate on every possible challenge that students might encounter, they often end up over-scaffolding (providing too much support, which decreases student independence). This slows down the lesson, reducing the number of distributed opportunities that students will have to build their competence and independence.

Linguistic Equity in K.L.I.

K.L.I. is specifically designed to help emergent bilingual students strengthen their text comprehension in English. However, English language instruction for these students must be grounded in an understanding of and respect for linguistic diversity.

All students have rich linguistic resources that they bring to school. K.L.I. is not designed to teach students how to speak or to pass judgment on their use of language as “good,” “bad,” “proper,” or “correct,” but instead to help students expand their understanding of the forms of English they will likely encounter in school texts. It is important for students to know that the ways they already use language are valued and valuable.

In many instances, multilingual students benefit from leveraging their *full linguistic repertoire (FLR)* during K.L.I. This means creating opportunities for students to not only converse in English, but also in their home languages or dialects. Many students and teachers will do this naturally, but to ensure that these opportunities are available for everyone using K.L.I., the table below lists a few ways that students’ FLR can be intentionally activated in each component. Leveraging students’ linguistic resources can be a powerful tool to increase both their academic performance and their confidence.

Table 4: Ways to Help Multilingual Learners Access their Full Linguistic Repertoires (FLR)

Component	Suggested FLR Opportunities
Discovery Reading	<ul style="list-style-type: none"> • Providing cognates for vocabulary words or inviting students to share cognates <ul style="list-style-type: none"> ○ Ask students if they can think of a word with a similar meaning that sounds like the target word in their home language • Partner discussions in home language during DR routines • Asking questions of each other in home language
Confident Reading	<ul style="list-style-type: none"> • Partner discussions in home language when using the routines on the DR prompt card • Asking questions of each other in home language • Making connections between home language and English during the Bridging Language routine <ul style="list-style-type: none"> ○ Compare and contrast language features such as transitional phrases or pronoun referents in English and their home languages

Uncover the Structure	<ul style="list-style-type: none"> • Asking questions of each other in home language • Making connections between home language and English during the signal word hunt <ul style="list-style-type: none"> ○ Compare and contrast these words or phrases in English and their home languages • Summarizing in home language before working together to summarize in English
Breaking Words	<ul style="list-style-type: none"> • Providing cognates for words when applicable or inviting students to share cognates <ul style="list-style-type: none"> ○ Ask students if they can think of a word with a similar meaning and sounds like the target word in their home language • Asking questions of each other in home language
Sentence Workshop	<ul style="list-style-type: none"> • Provide cognates for words when applicable or inviting students to share cognates • Partner discussions in or about home language during activity <ul style="list-style-type: none"> ○ Comparing and contrasting morphosyntactic changes • Asking questions of each other in home language

Theory of Change

When fully implemented, K.L.I. is theorized to positively affect reading comprehension in ELs through the following pathway (see Figure 1):

- When implemented with fidelity, K.L.I. will create sustained, repeated opportunities for ELs to engage in four key practices:
 - Reflecting on and manipulating forms of language often encountered in school texts (e.g., attending closely and explicitly to language structure and vocabulary);
 - Purposeful, accurate reading with teacher feedback and modeling;
 - Discussing and synthesizing across multiple texts to gain new knowledge;
 - Practicing and explicating metacognitive processes that help build a mental model of a text.
- These four practices directly affect the proposed underlying processes and competencies necessary for comprehension growth in this population: English language knowledge, reading fluency, content area knowledge, and comprehension processes.
- The effects of K.L.I. will be observable in proximal outcomes of language and reading processes, which will impact reading comprehension as measured on standardized instruments.

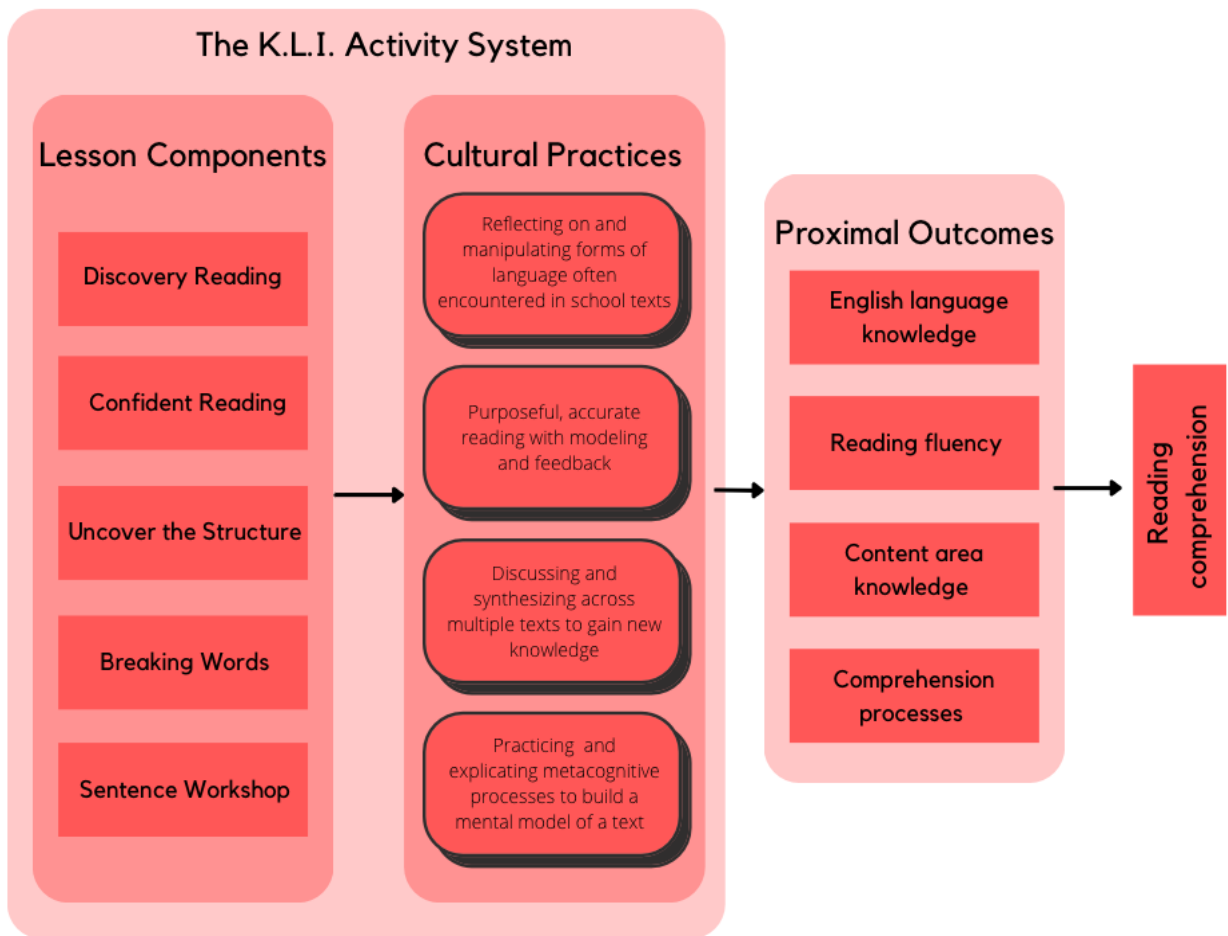


Figure 1: How K.L.I. is Theorized to Impact Student Reading Outcomes