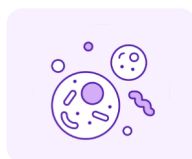
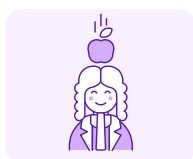

Delivering High-Quality Instructional Resources

THROUGH PHENOMENA-DRIVEN, THREE-DIMENSIONAL LEARNING

ALIGNMENT TO KDE'S SIX CHARACTERISTICS OF HQIR

Operationalized through the Markers of High-Quality Science Instruction



Introduction

Kentucky's own 2023-24 KSA data shows elementary science proficiency at just 34%, trailing reading (47%) and near/below the math benchmark (42%). Science is, by the state's own numbers, the discipline furthest behind. Inquisitive PreK-5 Science is a comprehensive, phenomena-based curriculum intentionally designed to close that specific gap while it meets and exceeds the Kentucky Department of Education's definition of High-Quality Instructional Resources (HQIR).

Inquisitive delivers full alignment to the Kentucky Academic Standards (KAS) for Science (KDE, 2022; effective statewide beginning 2023-24) while ensuring instruction is research-based, comprehensive, culturally relevant and accessible to all learners.

These characteristics are not addressed independently; they are realized through KDE's Markers of High-Quality Science Instructional Resources, as defined in the Science Instructional Resources Consumer Guide: Phenomena and Problems Drive Learning, Three-Dimensional Science, Sensemaking and Science for All. Each is embedded in every lesson.

Instruction is structured through the 5E model (Engage, Explore, Explain, Elaborate, Evaluate), including the engineering design process integral to KAS for Science's engineering, technology and applications of science (ETS) core ideas, and integrates high-impact research from John Hattie and Robert J. Marzano, ensuring that evidence-based practices are consistently visible in classroom implementation.

Alignment to KDE's Six Characteristics of High-Quality Instructional Resources (HQIR), Operationalized Through the Markers of High-Quality Science Instruction (HQSI)

Contents

This whitepaper is organized around KDE’s six characteristics of High-Quality Instructional Resources. Each section closes with the observable result in Kentucky classrooms.

01. Alignment to the Kentucky Academic Standards (KAS)	Page 3
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01 Alignment to the Kentucky Academic Standards (KAS)

Inquisitive meets and exceeds KAS alignment by embedding three-dimensional learning, Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Crosscutting Concepts (CCCs), within every lesson and across units.

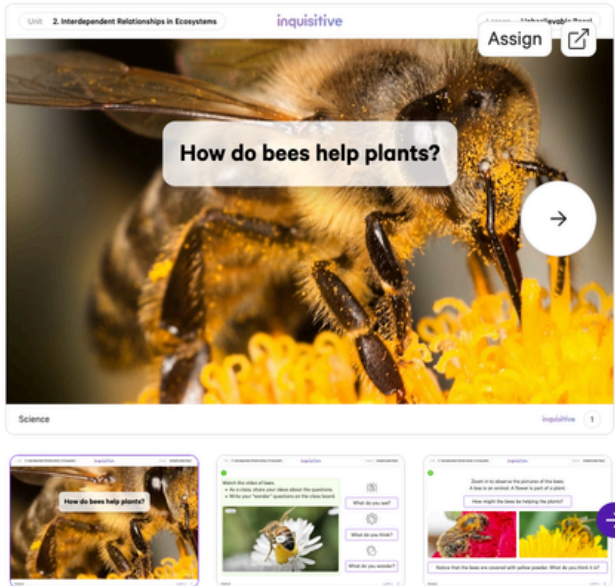
Standards are not taught in isolation; they are integrated into coherent learning sequences that require students to apply knowledge in meaningful contexts.

Teachers observe students regularly engaging in modeling, data analysis, and evidence-based reasoning aligned to grade-level performance expectations. Students consistently demonstrate the ability to transfer understanding to new contexts, reflecting deep conceptual learning.

This alignment is operationalized through *HQSI Marker 2: Three-Dimensional Science*, ensuring that standards are fully realized in instruction and assessment.

RESULT

Students demonstrate consistent, observable three-dimensional learning aligned to KAS expectations.



Standards

NGSS Performance Expectations

2-LS2-2

Science and Engineering Practices (SEPs)

Developing and Using Models

Disciplinary Core Ideas (DCIs)

Developing Possible Solutions

Interdependent Relationships in Ecosystems

Crosscutting Concepts (CCCs)

Structure and Function

Lesson Vocabulary

pollinate

The teaching and learning sequence shows the standards each lesson addresses. The performance expectation shown (2-LS2-2) is the KAS for Science code, alongside the SEP, DCIs and CCC that make the lesson three-dimensional

02 Research-Based and/or Externally Validated

Inquisitive meets and exceeds research-based criteria by embedding high-impact instructional strategies from Rodger W. Bybee, John Hattie and Robert J. Rodger into lesson design.

Inquisitive lessons are structured around the 5E model, developed by Rodger Bybee, guiding students through a coherent, inquiry-driven process that builds deep understanding of scientific concepts.

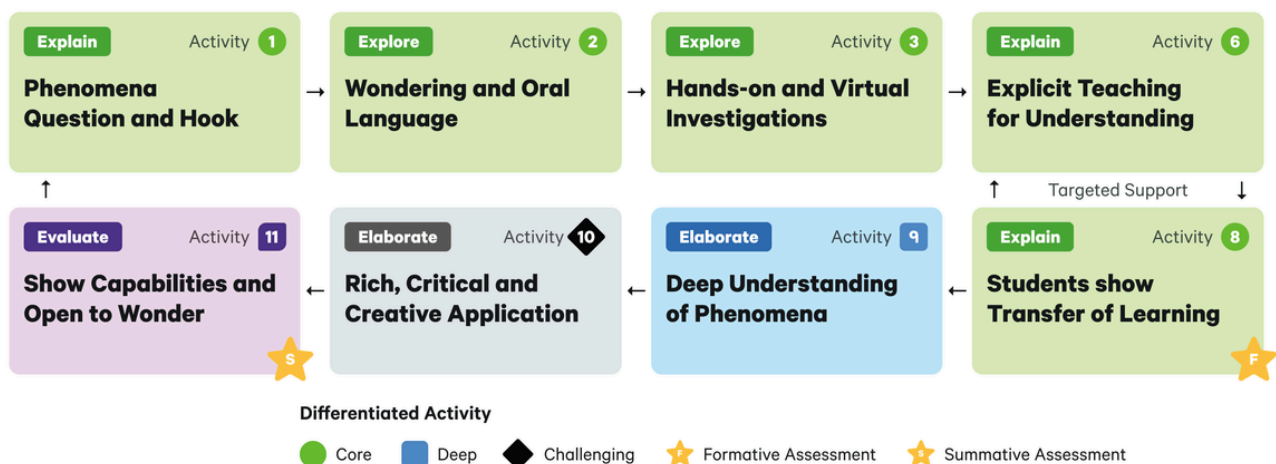
Teachers consistently articulate clear learning intentions and success criteria (Hattie), facilitate structured peer discussion, and provide timely, actionable feedback. Students engage in scaffolded learning experiences supported by worked examples, visual models, and structured representations of thinking (Marzano).

Classrooms show evidence of students reflecting on their thinking, investigation, collecting evidence, revising ideas, and engaging in metacognitive processes as part of ongoing learning.

These practices are embedded within *HQSI Marker 3: Sensemaking*, where students actively construct and refine understanding.

RESULT

Instruction reflects validated, high-impact practices that accelerate student understanding and support deeper learning.



03 Comprehensive: Engaging Texts, Tasks, and Assessments

Inquisitive meets and exceeds expectations for comprehensiveness by providing a complete, integrated system of instruction that includes multimedia resources, hands-on investigations, structured tasks, and embedded assessments.

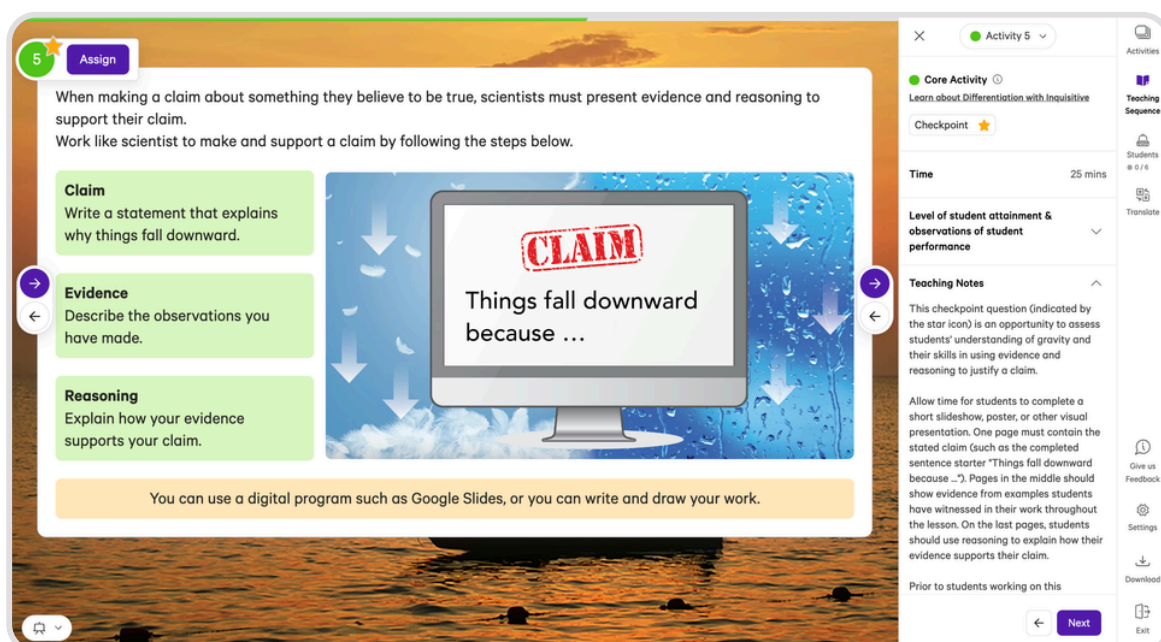
Students interact with videos, images, eBooks, and real-world data as part of their investigations. Teachers observe students engaging in sustained inquiry, collaborative problem-solving, and performance-based tasks that require application of knowledge.

Assessment is embedded throughout and designed to elicit observable evidence of three-dimensional learning, including discussions, written explanations, models, and projects. This reflects *HQSI Marker 2* and ensures alignment between instruction and assessment.

Every lesson includes a three-dimensional formative assessment task (indicated with the Gold Star) and supported by multidimensional grading rubric and recommendations for support.

RESULT

Instruction, engagement, and assessment are fully integrated, providing a coherent and comprehensive learning experience.



Assessment is built into the lesson with teaching notes and a checkpoint indicator for the teacher

04 Fostering Vibrant Student Learning Experiences

Inquisitive meets and exceeds expectations for vibrant learning by positioning students as active participants in inquiry. Each unit begins with a compelling phenomenon that sparks curiosity and drives sustained investigation.

Classrooms show evidence of students asking questions, testing ideas, engaging in hands-on investigations, and applying their learning to real-world problems. Students are consistently engaged in collaborative discussions and problem-solving, reflecting authentic scientific practice.

This aligns directly with *HQSI Marker 1: Phenomena and Problems* drive learning and *HQSI Marker 3: Sensemaking*, ensuring that learning is active, relevant, and intellectually engaging.

RESULT

Students are consistently engaged in meaningful, inquiry-driven learning that promotes curiosity, persistence, and deep understanding.

The screenshot displays the Inquisitive platform interface for a hands-on investigation. The main content area is titled "Part 1 of 4" and includes an "Assign" button. The text reads: "The yellow powder on the bees is called pollen. Bees gather a sweet liquid called nectar from flowers." Below this, it says: "Work in groups to find out what happens when bees visit flowers. First collect your materials." A "Materials" section lists: "Each pair will need: 1 balloon, 2 paper plates, 1 marker pen, 2 different-colored powders such as flour and flavored milk powder." An image shows a blue balloon, two white plates, a black pen, and piles of white and orange powders. The right sidebar shows "Activity 3" with a "Core Activity" section titled "Learn about Differentiation with Inquisitive". It includes a "Time" of 30 mins, "Teaching Notes" for each part, and a "Possible Lesson Break--" section. The bottom of the interface has a "Next" button and an "Exit" button.

Hands on investigations are designed around relevant phenomena to engage students in real-world problems

05 Culturally Relevant and Free from Bias

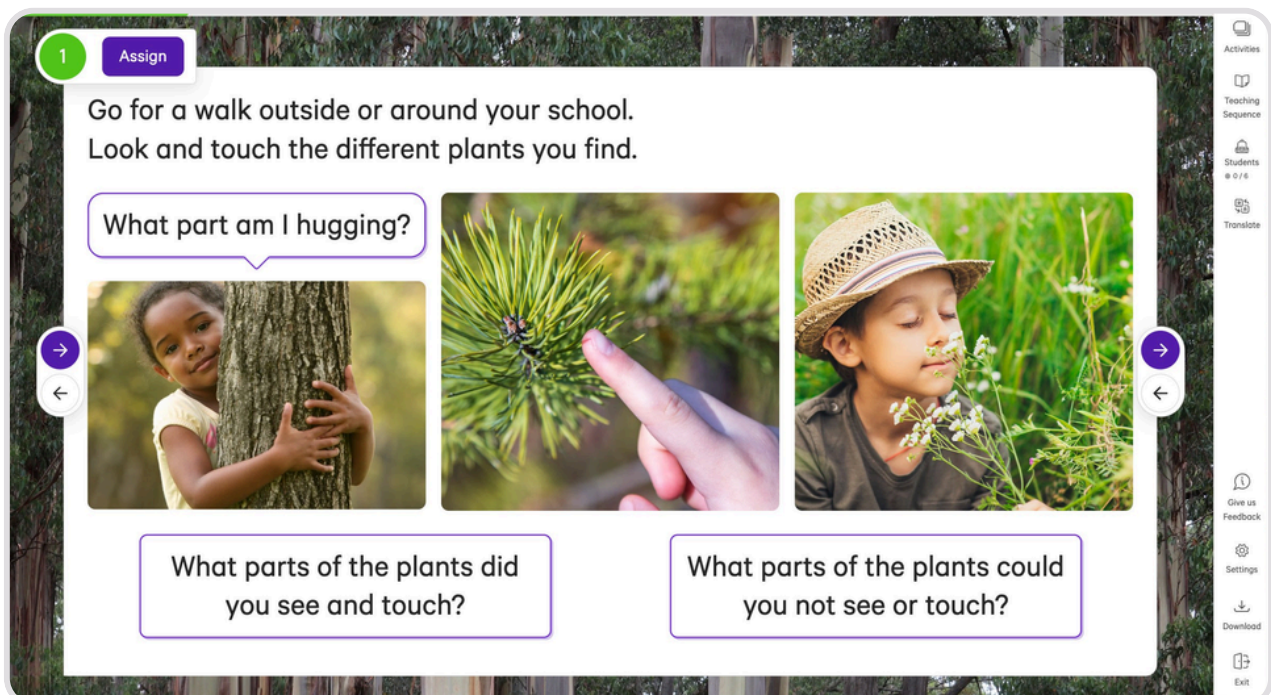
Inquisitive meets and exceeds expectations for cultural relevance by intentionally connecting learning to students' identities, communities, and lived experiences. Phenomena are selected to reflect both local and global contexts, ensuring relevance while expanding perspectives.

Students encounter diverse scientists, viewpoints, and real-world applications, avoiding single narratives and promoting inclusive representation. Classrooms reflect students making connections between science and their own experiences, strengthening engagement and belonging.

This aligns with KDE's Equity Lens of Culture and Identity and is embedded within *HQSI Markers 1* and 4.

RESULT

Students see themselves reflected in science and engage in learning that is both relevant and inclusive.



Phenomena drawn from students' own surroundings supporting diverse learners and real-world applications.

06 Accessible for All Students

Inquisitive meets and exceeds expectations for accessibility by ensuring all students can engage with rigorous, grade-level science. Materials are available in 50+ languages and include features such as text-to-speech, closed captions, and flexible digital and print formats.

Teachers consistently use built-in scaffolds, including differentiated prompts and supports, to provide multiple entry points without lowering cognitive demand. Students demonstrate understanding through a variety of modalities, including verbal, visual, written, and digital responses.

This reflects *HQSI Marker 4, Science for All: Access to Standards for All Learners*, and aligns with KDE's Equity Lenses by providing all students with access to grade-level content and the KAS, alongside varied ways to engage and demonstrate their learning.

RESULT

All students access rigorous, grade-level science with the supports they need.

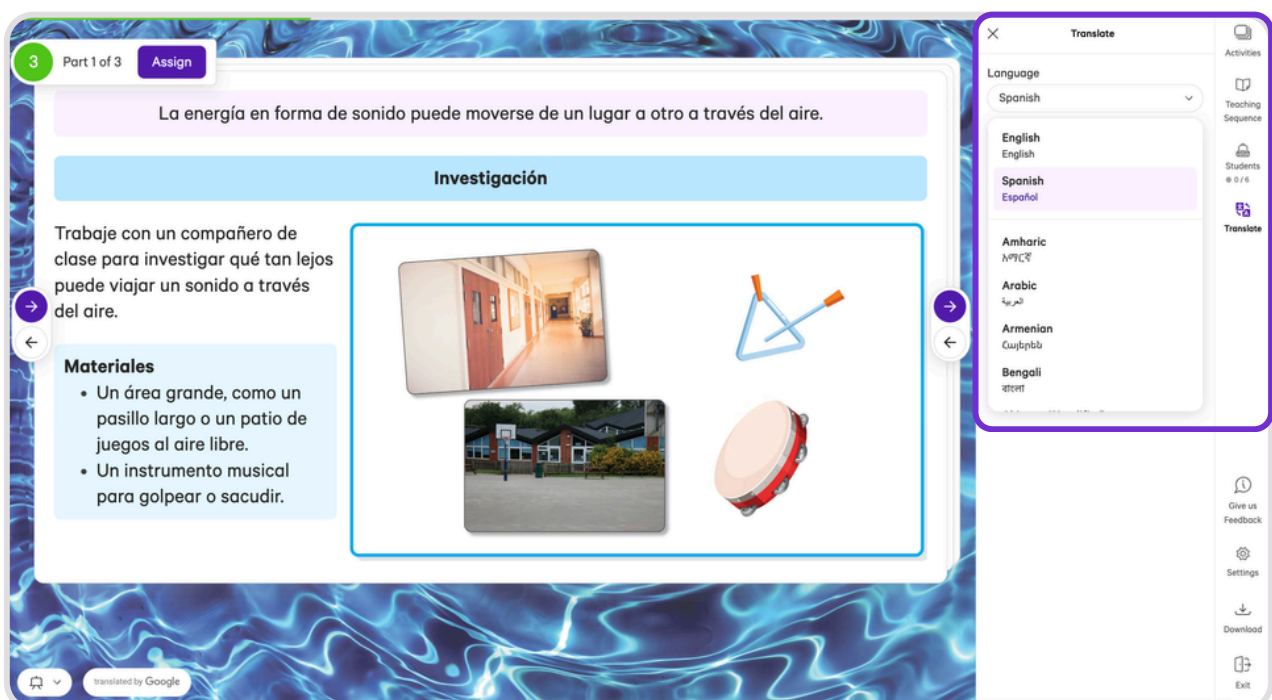


Figure 5. The same lesson in Spanish. Lessons translate into 50+ languages across digital and print, with text-to-speech available.

Conclusion

Inquisitive PreK-5 Science meets and exceeds KDE's six characteristics of High-Quality Instructional Resources by operationalizing them through the Markers of High-Quality Science Instruction.

- Standards are realized through consistent three-dimensional learning
- Research-based practices are embedded in daily instruction
- Instruction, tasks, and assessment are fully integrated
- Learning is inquiry-driven and student-centered
- Cultural relevance and representation are intentionally designed
- Accessibility ensures all students engage in rigorous science

Classrooms using Inquisitive show clear, observable evidence of students actively making sense of phenomena, applying scientific practices, and engaging deeply in learning.

FINAL RESULT

Inquisitive delivers a coherent, equitable, and research-based science program that not only aligns with KDE expectations, but consistently brings those expectations to life in classroom practice.

Next Steps

- 01** Request the Inquisitive KAS for Science crosswalk
- 02** Schedule a district pilot
- 03** Ask us to walk your review committee through the KDE's Science Evaluation Form

Contact



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Inquisitive PreK–5 Science meets and exceeds KDE’s six characteristics of High-Quality Instructional Resources.

THE SIX CHARACTERISTICS

- 01** Alignment to the Kentucky Academic Standards (KAS)
- 02** Research-based and/or externally validated
- 03** Engaging texts, tasks and assessments
- 04** Vibrant, inquiry-driven learning experiences
- 05** Culturally relevant and free from bias
- 06** Accessible for all students

