



PUBLISHER'S RESPONSE TO EDREPORTS REVIEW OF IQWST® INTEGRATED EDITION

January 2020

Activate Learning, publisher of **IQWST® Integrated Edition**, is dedicated to developing science literacy through research-based, investigation-driven, student-centered curricula that support the objectives of *A Framework for K-12 Science Education* and the Next Generation Science Standards. IQWST (Investigating and Questioning our World through Science and Technology) was designed for the Standards, in consultation with *Framework* and NGSS writers and advisors. Like other publishers of exemplary science programs, we find the EdReports review to be deeply flawed in its interpretation of the NGSS and its evaluation process.

EdReports' review reflects an interpretation of the NGSS that privileges a highly prescriptive approach to teaching, trivializing the role of three-dimensional learning.

Many districts using recognized rubrics evaluate IQWST highly, reaching a much different conclusion than EdReports reaches using its rubric. Cary Sneider, a *Framework* and NGSS team leader, and NGSS team writer Peter McLaren express, "Our impression ... is that it is unnecessarily rigid in its requirements, in contrast to the intent of the NGSS."¹

The NGSS ... reflect what a student should know and be able to do; they do not dictate the manner or methods by which standards are taught. The PEs are written in a way that expresses the concept and skills to be performed but still leaves curriculum and instructional decisions to states, districts, schools, and teachers. The PEs do not dictate curriculum; rather they are coherently developed to allow flexibility in the instruction of the standards....The NGSS do not dictate or limit curriculum and instructional choices.²

EdReports presupposes 1) its own conceptualization of an appropriate duration for a learning sequence in which all three dimensions (DCIs, SEPs, and CCCs) should be interwoven and assessed, and 2) that all three dimensions must be integrated in every aspect of instruction and assessment. An IQWST activity in which students analyze data, examine patterns, and identify a trend that encourages students' questions is faulted, for example, because the activity does not integrate a DCI. In fact, it does not. Instead, the activity engages interest as a way to introduce the module. Like other instructional components, EdReports analyzes this activity apart from its broader sequence (e.g., multi-part lesson, multi-lesson learning set, entire module), then critiques it for not fitting an "all-three-dimensions-all-the-time" formula.

PEEC³ indicates, "It may not be possible for every student learning experience to be three-dimensional." NGSS assessment evaluation criteria include that tasks should "require students to explicitly apply at least two dimensions."⁴ Every IQWST module provides many opportunities to engage in three-dimensional learning, but experiencing a phenomenon, investigating, collaborating, discussing, reading, and writing are not necessarily three-dimensional when analyzed apart from their coherent fit within a larger learning sequence.

"IQWST instructional materials rely heavily upon students engaging in the scientific practices of NGSS as they uncover scientific ideas and discover content through the DCIs in the context of authentic learning opportunities that are fueled by the IQWST storylines.... Students often struggle with open-ended discussion and collaborative norms ... once norms for risk-taking and making thinking visible is established, they transition to more conceptual reasoning and gain the confidence to 'own their ideas.' I don't know of any other resource that is a conduit for this change other than IQWST."

- Science Coordinator, Indian Prairie School District, IL

We believe that EdReports' interpretation of the Standards trivializes the complex instructional shifts required for three-dimensional learning, discounts ways that 3D learning might be flexibly approached, and reduces three-dimensionality to a formula. IQWST privileges *deep student learning* over this formulaic approach to teaching and learning.

"The concepts within the curricula build within each unit to ensure students have a strong foundation for each big idea. Concepts are revisited in later grades, reviewing prior knowledge and continuing to connect and grow the student knowledge."

- IQWST Teacher, Eaton Rapids Middle School, MI

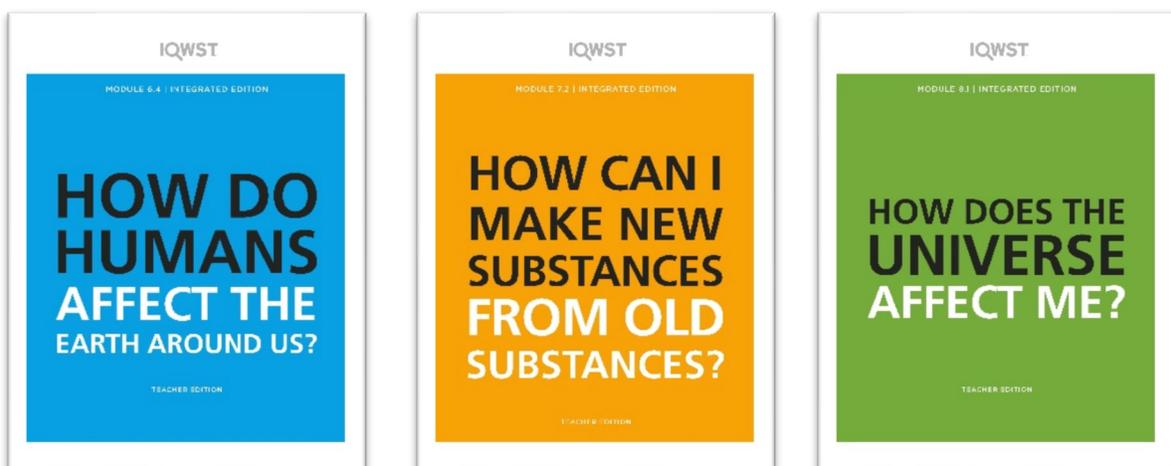
EdReports narrowly interprets what it means for phenomena to drive learning.

After publication of the Standards, *anchoring*, *investigative*, and *everyday* categories were identified⁵ to define phenomena and how phenomena should be used in instruction. People agree that phenomena must be observable, but may question whether an anchor can be: “A case ... ,[or] something that is puzzling (why isn’t rainwater salty?), or a wonderment (how did the solar system form?).”⁶ An NGSS resource stresses flexibility, “A single phenomenon doesn’t have to cover an entire unit, and different phenomena will take different amounts of time to figure out.”⁷ The focus, it continues, is not only on phenomena but on “student-generated questions” about phenomena that guide teaching and learning.

A core tenet of IQWST is that phenomena drive learning, and that Driving Questions, lesson questions, and students’ own questions drive learning. Students engage with many types of phenomena for variable amounts of time. By module’s end, students have answered a Driving Question and addressed several phenomena with rich, evidence-based explanations. Yet EdReports concludes that IQWST does not “meet expectations for three-dimensional learning and that phenomena and problems drive learning.”

“That EdReports would evaluate IQWST as not having students make sense of phenomena, when making sense of phenomena is the driving force of IQWST, is evidence that reviewers misunderstand what is meant by phenomena, or fail to understand what it means to develop understanding across multiple lessons, so as to explain an anchoring phenomenon by the end of a unit.”

- Joe Krajcik, Ph.D., original IQWST author team, Principal Investigator, and a *Framework* and NGSS team leader



IQWST® Integrated Edition covers clearly state the Driving Question that students will answer by the end of the unit.

EdReports narrowly interprets what it means to *leverage students' prior knowledge*.

Every IQWST module elicits students' prior knowledge and original questions to initiate instruction, and a Driving Question Board (DQB) is used to track understanding as it develops over time. As students encounter new phenomena, the DQB becomes a tool for leveraging and building on prior knowledge of those phenomena across lessons.

“The driving question board allows students to visually track their thinking and learning. With the constant updates made to the board, students learn that changing your beliefs based upon the scientific evidence in front of you is ok, encouraged, and what scientists do.”

- Curriculum Coordinator, Salem Public Schools, MA

EdReports asserts that materials do not “...connect students' experiences with the phenomenon or problem,” even though comprehensive storylines connect activities, lessons, and modules; student readings explicitly connect in-class phenomena with students' everyday lives; and rich and rigorous classroom discussion connects students' prior knowledge and experiences with the phenomena they investigate.

“As you see the storyline develop, you see the core concepts, and how they connect with past and future learning.”

- IQWST Teacher, Whitefish Bay Middle School, WI

EdReports narrowly interprets *assessment*.

EdReports focuses on designated assessments, and undervalues discussion questions, questions embedded in readings, and each activity's *Making Sense* questions as viable opportunities to assess learning in multi-dimensional ways. IQWST's approach is cited in a National Academies publication⁸ to illustrate class discussion and specific questioning strategies to assess student thinking. Furthermore, IQWST's strategy for explaining phenomena is identified as an *exemplar*, “because it assesses what students have learned from a series of activities that reflect the multiple dimensions of science learning” (p. 33).

Teachers across the country report that since teaching with IQWST, their students demonstrate a deeper understanding of content, and have become independent, critical thinkers and creative problem solvers as they engage in collaborative investigation and discourse.

[Students] really understand what they learn, and they remember it and can connect it to other concepts in the future. Teaching 7th they remember more from 6th, and teaching 8th, the connections to 6th and 7th are huge.

- IQWST Teacher, Chippewa Valley Schools, MI

CONCLUSION

We will reevaluate some examples cited by EdReports as we engage in the process of continually improving IQWST, but overall, we believe that the EdReports review does a disservice to those searching for quality instructional materials as its alignment criteria and evaluation tool imply a narrow and rigid formula for effectively addressing the NGSS, contradicting the flexible intent of the Standards.

The EdReports review does not consider:

- How does IQWST reflect the intent of the NGSS by involving students in three-dimensional learning experiences so that they have constructed understandings of the DCIs over time?
- So that they have had multiple and sufficient opportunities to develop facility with the practices?
- So that they have had multiple and sufficient exposures to the crosscutting concepts across all areas of science?

That is the spirit and intent of NGSS. That is what IQWST does. As research indicates, and the *Framework* and NGSS describe, students learn best when they use coherent materials that support them in building understanding over time. We encourage districts to carefully examine the research foundation, learning experiences, and long-term student achievement when reviewing and selecting curricula.

Finally, note that EdReports limits the length of Publishers' Responses and maintains editorial rights; therefore, publishers cannot control whether responses are published as written. We encourage districts to read other Publishers' Responses who share similar concerns regarding EdReports' review process and rubric used to evaluate science curricula.

¹ [HMH Science Dimensions Publisher's Response](#)

² [The Next Generation Science Standards Executive Summary](#)

³ [PEEC for NGSS Instructional Materials Design](#)

⁴ [Criteria for Procuring and Evaluating High-Quality and Aligned Summative Science Assessments](#)

⁵ [Using Phenomena in NGSS-Designed Lessons and Units](#)

⁶ [Qualities of a good anchor phenomenon for a coherent sequence of science lessons](#)

⁷ [Using Phenomena in NGSS-Designed Lessons and Units](#)

⁸ [Seeing Students Learn Science: Integrating Assessment and Instruction in the Classroom \(download free pdf\)](#)