Overview of Forward Exam Specifications in Science

Vision

Truly understanding whether students are approaching Wisconsin's vision for science learning requires more than traditional, content-based exams. It requires synthesizing evidence from a system of assessments that includes elements such as formative performance tasks, lab reports, projects, scientific research, portfolios, surveys, and statewide summative tests. The Forward Exam provides an important piece of information in this system, a high altitude view of science programs, though it is not meant for student-level analysis.

Standards

The Wisconsin Standards for Science (WSS) spell out a goal of students using disciplinary core ideas, scientific practices, and crosscutting concepts together to make sense of phenomena from the world around them. The Forward Exam reflects the increased rigor of these standards as it asks students to make sense of a scientific context, reason through science ideas, and determine which answers are best supported by evidence. Because the test represents new standards and new ways of eliciting student understanding, it will begin a new trend line in longitudinal analysis. Consider spring of 2019 the starting point in this strand of evidence of building scientifically literate citizens.

Test Items

Dozens of Wisconsin educators have suggested contexts for the Forward Exam questions, reviewed sets of questions, and revised those questions to ensure we gather effective evidence of whether or not students are meeting our science standards.

Assessment items look different from the previous WKCE in science. As can be seen in released sample questions, students will have a reading passage connected to a set of 3-5 related questions. The introductory passages provide background information to put students on a more level playing field. The WSS suggest a wide range of connections among practices, disciplinary core ideas, and crosscutting concepts. The Forward Exam will not be able to assess every combination of these dimensions, but will engage students in work such as evaluating models, using evidence to support claims, distinguishing patterns, refining experiments, and selecting which questions will inform cause and effect determinations. Questions will not emphasize memorization of facts or solely test reading comprehension.

Grade Level Tests

The fourth grade exam will only include fourth grade disciplinary core ideas. This content is unique to the fourth grade, and the exam is aligned to it. The science and engineering practices and crosscutting concepts come in a third to fifth grade band, and they will be tested at a level that is developmentally appropriate for the fourth grade. Individual exam items connect to a specific disciplinary core idea, and a practice and/or crosscutting concept. Some items combine

these three dimensions in alignment to the provided 3D Sample Performance Indicators in each section of standards. Other items combine the three dimensions in additional ways to ensure a broad coverage of these standards on the exam.

The eighth grade exam will include sixth through eighth grade band disciplinary core ideas, as these content elements do not align to one particular grade. The science and engineering practices and crosscutting concepts also come in sixth to eighth grade bands, so they are all possible connections at the eighth grade. Like the fourth grade exam, individual exam items on the eighth grade test connect to a specific disciplinary core idea, and a practice and/or crosscutting concept. Some items combine these three dimensions following the provided 3D Sample Performance Indicators in each section of standards, while other items combine the three dimensions in additional ways.

Reporting Categories

The table below details the reporting categories for the Forward Exam. The points possible in each category will be finalized based on pilot exam results. The key reporting statements come directly from the three-dimensional performance indicator statement of the standards: "Students use scientific and engineering practices, crosscutting concepts, and knowledge of disciplinary core ideas to make sense of phenomena and solver problems." The four main disciplinary areas of the standards – life science, physical science, earth and space science, and engineering – each have their own category. Because of the overlapping nature of the practices and crosscutting concepts, the exam could not effectively and validly measure them individually, so they are not reported as separate categories. Instead, the focus is on students' big picture sense-making. Classroom and school-based assessments should be used to provide evidence of students' abilities within particular practices and crosscutting concepts – not alone, but in connection with content learning.

Reporting Category – Learning Claim	Points Possible per Reporting Category	Number of Item Clusters
Students can use scientific practices, crosscutting concepts, and **life science** content knowledge to make sense of a **life science** phenomenon.	12-16	~4
Students can use scientific practices, crosscutting concepts, and **physical science** content knowledge to make sense of a **physical science** phenomenon.	12-16	~4
Students can use scientific practices, crosscutting concepts, and **earth and space science** content knowledge to make sense of an **earth and space science** phenomenon.	12-16	~4
Students can use science and engineering practices and crosscutting concepts, and **engineering** understanding to solve problems or make sense of phenomena within a scenario.	8-12	Embedded in other disciplines
Totals	*46 Points*	*~12 item sets*

Questions?

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