

The DLM® Science Essential Elements

The Dynamic Learning Maps (DLM) Science Essential Elements are specific statements of knowledge and skills that are linked to the grade-span expectations in A Framework for K-12 Science Education (National Research Council, 2012). Essential Elements (EEs) represent the science topics that are common to the alternate standards in DLM Science states and identify grade-span expectations for students with significant cognitive disabilities.

The current Essential Elements will be used in DLM science alternate assessments through at least the 2019-2020 academic year. Similar to English language arts and mathematics, the DLM science consortium intends to develop a learning map based on research regarding how students learn science content and engage in science and engineering practices. Revisions to the Essential Elements may be made after the science map is completed. DLM science states will determine the schedule of changes to the EEs, ensuring adequate notice to students, parents/guardians, educators and other stakeholders so that instruction can be adjusted before new assessments are delivered. The following table describes how the DLM Science Essential Elements were created using a four-stage process.

Process for Creating Science Essential Elements

Stage	Description
1. Essential Elements created by DLM and reviewed internally	- DLM staff identified common cross-grade science topics in DLM states' alternate standards. - For each common topic, a grade-level, alternate content standard (target linkage level) was created using a science core idea with a science and engineering practice from the <i>Framework</i>. - DLM science uses 3 linkage levels. For each Target linkage level, two additional linkage levels were created, called Initial and Precursor. A five linkage level system was not used in DLM science because the DLM Alternate Assessment does not currently have a fine-grained learning map for science. - Expert panel review
2. Face-to-face state educator review	The panel consisted of 16 experts in science and 17 experts in special education. Five states participated in the review. The review: - clarified the science concepts and statements related to science and engineering practices that students should do, - focused on universal access issues, - aligned the linkage levels, and - provided examples within the Essential Element statements.
3. States conduct internal reviews	The states determined if: - The EEs fit within the topics and core ideas of the <i>Framework</i> - The EEs in each topic support student learning over time - The EEs and linkage level learning targets are clearly defined - The linkage levels have appropriate levels of breadth and depth
4. Final state review	Forty-three Essential Elements were approved by consensus of participating states in December, 2014. Thirty-four EEs were approved for use on science assessment blueprints.