

## Vertical Curriculum Alignment for Science

There are three aspects of curriculum alignment that schools must consider across grade levels: alignment of knowledge and skills to be taught (along with the materials used to teach them), coordination of teaching practices used to deliver instruction, and improvement of assessment practices used to validate student learning and inform instruction. Below is a listing of possible structured activities that support each path. Individual groups must decide which pathways and activities best suit the goals they identify, and should make selections to best fit group needs and available time. The list is not intended to be exhaustive, but is an organizer for next steps in aligning practices.

<p><b>Create Curricular Alignment:</b> Specify areas of focus by grade level and coordinate expectations, approaches, and materials to create an articulated curriculum sequence.</p>	<p><b>Compare Teaching Practices:</b> Share lesson approaches within targeted topics to improve practice and incorporate external workshop ideas into local classrooms.</p>	<p><b>Improve Assessment:</b> <b>Practices:</b> Evaluate local assessment opportunities and practices to ensure equitable and useful assessments for both externally required and internally valued assessment.</p>
<p><b>Enduring Outcomes:</b> Use Oregon’s standards to help divide responsibility into “guaranteed” learning outcomes by grade level. Differentiated goals for teaching versus learning are discussed. Provides an initial critical step in coordinating more complex curricular decisions that may happen later. <i>3-4 hours</i></p>	<p><b>Target Standards:</b> Choose an emphasis to conduct subsequent activities. The focus may change over time, but within each activity one to two standards are chosen from among:</p> <ul style="list-style-type: none"> <li>• Overarching knowledge between content strands: biology, physical science, earth and space science, other fields</li> <li>• Thematic connections among the sciences (e.g. patterns of change, equilibrium, structure and function, scale, etc.)</li> <li>• Scientific inquiry</li> <li>• Research and theory study and analysis (similar to Social Science analysis structure in Oregon)</li> <li>• Other?</li> </ul> <p><i>1/2 hour or as part of other activities</i></p>	<p><b>Target standards:</b> Choose an emphasis to conduct subsequent activities. The focus may change over time, but within each activity one to two standards are chosen for from among:</p> <ul style="list-style-type: none"> <li>• Overarching knowledge between content strands: biology, physical science, earth and space science, other fields</li> <li>• Thematic connections among the sciences (e.g. patterns of change, equilibrium, structure and function, scale, etc.)</li> <li>• Scientific inquiry</li> <li>• Research and theory study and analysis (similar to Social Science analysis structure in Oregon)</li> <li>• Other?</li> </ul> <p><i>1/2 hour or as part of other activities</i></p>
<p><b>Vertical Lesson Alignment:</b> An outcome (standard) is chosen that connects across all grade levels and participants bring examples of the ways they would teach/assess to that outcome. Ideally, student work is included. Comparison is focused on the developmental progression of learning yielding a discussion of recommended</p>	<p><b>Collegial Review of Assignments:</b> Review assignments within the targeted standard(s) from each classroom in order to share and compare ideas and improve consistency in lesson approaches 3-6 hours (best if done multiple times)</p>	<p><b>Collegial Review of Assessments:</b> Review assessments within the targeted standard(s) from each classroom to provide feedback about those used for work samples and/or desired classroom assessment. May also be done including student work and/or preliminary collections of evidence (portfolios) for CAM or PASS.</p>

<p>lesson strategies and structure by grade. <i>3-4 hours</i></p>		<p><i>3-6 hours (best if done multiple times)</i></p>
<p><b>Materials Alignment:</b> Compare the materials available for use at various grades including topical alignment, pedagogical approaches, and analysis of actual use. <i>3-5 hours</i></p>	<p><b>“Scooping” the Curriculum:</b> Named for the science technique of sampling aquatic animals, participants “scoop” all assignments given to students for somewhere between a week to a month and then review and discuss these in vertical and horizontal grade level groups. <i>6-8 hours</i></p>	<p><b>Cross-score Work Samples:</b> Score samples from participant’s classrooms to compare scoring patterns and improve equitability of scoring. <i>3-6 hours</i></p>
<p><b>Design Integrated or Theme Based Instruction:</b> Discuss possible organizers for cross-curricular or thematic instruction and design instructional sequences from between a month to a year in length using the organizer(s) of choice. <i>6 hours- multiple sessions depending on scope</i></p>	<p><b>Best Practices:</b> External facilitator(s) share recommended, successful techniques for teaching targeted topics. May be focused to overlap other school-wide efforts such as literacy training, differentiated instruction, cooperative learning, etc. A follow up Collegial Review session for participants to try out, and receive feedback on strategies is recommended. <i>Time depends on the scope of chosen strategies. May take from 1 to 3 sessions</i></p>	<p><b>Moderate Collections of Evidence:</b> Evaluate CIM portfolios or score CAM or PASS collections of evidence to improve sufficiency of collections and comparability of scoring. <i>3-6 hours</i></p>
<p><b>External Curriculum Models:</b> Learn about one or more curriculum design models and design curriculum sequences using a model of choice. <i>Time depends on model(s) chosen. Likely to take multiple sessions</i></p>	<p><b>Lesson Study:</b> Adapted from the method used by NWREL for collaborative design of lessons and systematic classroom observation by colleagues. <i>Time depends on number of participants. Takes multiple sessions, some for planning time, some for observations.</i></p>	<p><b>Design Assessment Tasks:</b> Learn a model for designing assessments and collaboratively work to design one or more tasks using the model. A follow up Collegial Review session for participants to try out, and receive feedback on strategies is recommended. <i>6-8 hours</i></p>