

STEM Learning Quality Indicator Map

Quality Indicator	<i>Initiation</i>	<i>Involvement</i>	<i>Implementation</i>	<i>Innovation</i>
<p>Student Engagement <i>STEM learning experiences are engaging and inspire creativity and imagination</i></p>	<p>STEM learning experience is activity driven with specific step by step directions</p>	<p>STEM learning experience is engaging and encourages creative thinking</p>	<p>STEM learning experience is engaging and fosters creative thinking and imagination</p>	<p>STEM learning experience is engaging, encourages creativity and stimulates imagination and is relevant to STEM issues and careers</p>
<p>Connection to Academic Content Standards <i>STEM learning experiences are explicitly anchored to relevant academic content standards</i></p>	<p>Connections to the academic content indicators are weak or non-existent</p>	<p>Connections to the academic content indicators are conceptually accurate but limited in scope</p>	<p>Connections to the academic content indicators are conceptually accurate and are applied to multiple concepts</p>	<p>Connections to academic content indicators are accurate and <i>well-articulated and develop conceptual understandings</i></p>
<p>Integrity of Instructional Design <i>STEM learning experiences support students in meeting specified learning goals</i></p>	<p>STEM learning experiences are weak or incomplete</p>	<p>STEM learning experiences are connected to what the student should know</p>	<p>STEM learning experiences are well structured, diversified and connected to what the student should know</p>	<p>STEM learning experiences are well structured, diversified and connected to what the student should know and be able to do</p>
<p>STEM Integration <i>STEM learning experiences are carefully designed to help students integrate knowledge and skills across STEM disciplines</i></p>	<p>STEM learning experience provides opportunity for students to apply knowledge and/or skills from science and math to complete assigned tasks</p>	<p>STEM learning experience challenges students to complete tasks that require them to integrate knowledge and/or skills from science and math to conduct an experiment or investigation</p>	<p>STEM learning experience challenges students to apply knowledge and skills from math and science to engineer possible solutions and/or responses to a problem</p>	<p>STEM learning experience challenges students to utilize appropriate <i>technologies</i>, math and science to <i>engineer</i> possible solutions and/or responses to a problem</p>
<p>Integration and Connections Across the Curriculum <i>Learning experiences help students connect STEM knowledge and 21st century skills across the curriculum</i></p>	<p>STEM learning experience references possible strategies for integrating 21st century but specifies no instructional pathway for connecting learning to other core disciplines</p>	<p>STEM learning experience references strategies for integrating 21st century skills and references ways for connecting learning with other disciplines</p>	<p>STEM learning experience makes connections for integrating 21st century skills and <i>extends or enhances learning</i> through making connections with other disciplines such as language arts, social studies, etc</p>	<p>STEM learning experience makes meaningful connections to other disciplines providing students with opportunities to apply 21st century skills and develop knowledge across disciplines such as technical writing, civic economic, or ethical issues</p>

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<p>Age Appropriate and Relevant</p> <p><i>STEM learning experiences provide age appropriate and relevant opportunities to accelerate and challenge learners</i></p>	STEM learning experience is age inappropriate for the targeted grade level or band	STEM learning experience is age appropriate for students and provides opportunities to engage learners	STEM learning experience is age appropriate for students and provides opportunities to engage and challenge learners	STEM learning experience is age appropriate and details specific relevant opportunities to accelerate and challenge learners
<p>Rigorous and Accurate STEM Content</p> <p><i>STEM learning experiences provide academic rigor and accurately focus on the enduring understanding from the relevant disciplines</i></p>	Academic content for the learning experience is inaccurate and/or insignificant	STEM content for the learning experience is accurate but relatively significant in the context of the discipline	STEM content is rigorous and accurately portrayed and tied to important concepts to the discipline	STEM content is rigorous and accurately portrayed and tied to one or more of the <i>big ideas</i> and <i>organizing themes</i> for the relevant discipline(s)
<p>Nature of the Problem or Project</p> <p><i>STEM learning experiences challenge students to develop their problem-solving and project management skills</i></p>	The problem or project is too simplistic with steps and/or directions for solving	The problem or project is sufficiently complex and challenging	The problem or project is complex and specifically designed to invite multiple perspectives and stimulate divergent thinking	The problem or project is purposefully designed to be <i>messy and</i> requires students to grapple with and frame the problem to craft possible solutions or responses
<p>Opportunities for STEM Career Exploration</p> <p><i>STEM learning experiences provide students with specific opportunities to explore STEM Careers</i></p>	STEM learning experience provides no specified opportunities for students to explore STEM careers and their prerequisite educational requirements	STEM learning experience makes general reference to related STEM career(s)	STEM learning experience encourages students to explore one or more specific STEM careers	STEM learning experience requires students to reflect on their personal interests and aptitudes with regard to STEM careers and provides specific opportunities to learn about STEM careers and their prerequisite post-secondary educational requirements

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<p>Degree Of Collaboration <i>STEM learning experiences require students to work and learn in teams</i></p>	<p>Students are not required to work or learn in collaboration with other students</p>	<p>Students are encouraged or required to work in informal collaborative teams with little attention given to team and individual accountability</p>	<p>Students are required to work in flexible groups that have defined expectations for individual and team accountability</p>	<p>Students are required to work in cooperative learning teams which focus on interpersonal skills and collaborative processes valued in STEM workplaces</p>
<p>Authenticity of Assessment(s) <i>STEM learning experiences require students to demonstrate knowledge and skill through authentic tasks</i></p>	<p>Assessments consist primarily of written exams and quizzes</p>	<p>Assessments are based performance and end product</p>	<p>Assessments are performance or product-based and designed to simulate reality, or be actual real-world experiences</p>	<p>Assessments are performance or product-based, designed to model real-world experiences, and are rubric based providing students with clear performance targets to guide their work</p>
<p>Quality of Technology Integration <i>STEM learning experiences provide students with opportunities to employ multiple technologies employed in STEM careers</i></p>	<p>Technology applications are primarily employed by the teacher or STEM professional</p>	<p>Technology Applications require students to engage in utilizing technologies to complete projects and/or tasks</p>	<p>Technology Applications require students to engage in utilizing technologies like those used in STEM careers</p>	<p>Technology Applications are conceptually accurate <i>across multiple components</i> and require students to engage in utilizing different kinds of technologies like those used in STEM careers</p>