

## Appendix A

# MSP Program Aims

<p style="text-align: center;"><b>LESSON DESIGN</b></p> <p><b>Purpose</b></p> <ul style="list-style-type: none"> <li>Teacher clearly conveys learning objectives through learning activities.</li> <li>Learning activities are highly relevant to students and are connected to a big idea.</li> </ul> <p><b>Prior Knowledge &amp; Common Misunderstandings</b></p> <ul style="list-style-type: none"> <li>Teacher identifies prior knowledge of students through multiple strategies.</li> </ul> <p><b>Materials/ Resources/ Manipulatives</b></p> <ul style="list-style-type: none"> <li>The resources, including manipulatives, are identified, selected and employed to meet the scope of student needs.</li> </ul> <p><b>Lesson Sequencing</b></p> <ul style="list-style-type: none"> <li>Coherent structure, pacing and transitions of activities lead to conceptual understanding/sense-making.</li> </ul> <p><b>Assessment of Student Understanding</b></p> <ul style="list-style-type: none"> <li>Balanced multiple assessment strategies aligned to learning objectives allow on-going evaluation of all students' understanding.</li> </ul> <p><b>Closure</b></p> <ul style="list-style-type: none"> <li>Lesson sequence allows time for student reflection, questioning, and culminating in a summary of learning of the lesson.</li> </ul>	<p style="text-align: center;"><b>LESSON IMPLEMENTATION</b></p> <p><b>Misconceptions of Science/Math</b></p> <ul style="list-style-type: none"> <li>Teacher implements instructional strategies that elicit, identify, and correct misconceptions of science/math.</li> </ul> <p><b>Teacher as Facilitator</b></p> <ul style="list-style-type: none"> <li>Teacher allows students to take charge of the learning process and monitors students' understanding, modifying the lesson when necessary.</li> </ul> <p><b>Student Engagement in Learning</b></p> <ul style="list-style-type: none"> <li>Teacher encourages active student engagement resulting in students taking responsibility for constructing their own understanding.</li> </ul> <p><b>Teacher's Use of Questions</b></p> <ul style="list-style-type: none"> <li>Teacher's questioning strategies enhance the development of student conceptual understanding/problem solving.</li> </ul> <p><b>Communication of the "Big Ideas"</b></p> <ul style="list-style-type: none"> <li>Teacher makes sure that students understand the connections between the activity and the "big idea" or major themes of the lesson.</li> </ul>
<p style="text-align: center;"><b>CONTENT</b></p> <p><b>Appropriateness</b></p> <ul style="list-style-type: none"> <li>The science/math content is accurate and developmentally appropriate in breadth and depth.</li> <li>The content of the entire lesson is significant and worthwhile.</li> </ul> <p><b>Engagement with Big Ideas</b></p> <ul style="list-style-type: none"> <li>The students are engaged with important ideas and collaborative discussion that focus on the content of the lesson.</li> </ul> <p><b>Science/Math as Dynamic Body of Knowledge</b></p> <ul style="list-style-type: none"> <li>The science/math is presented as a dynamic body of knowledge that encourages searching for truth through investigation, analysis, and explanation.</li> </ul> <p><b>Conceptual Understanding</b></p> <ul style="list-style-type: none"> <li>The degree of conceptual understanding of the content is appropriate for the developmental needs of the students.</li> <li>Any identified misconceptions of content are addressed.</li> </ul> <p><b>Life Connections</b></p> <ul style="list-style-type: none"> <li>The content of the lesson makes meaningful connections to student experiences outside of the classroom.</li> </ul>	<p style="text-align: center;"><b>LEARNING CULTURE</b></p> <p><b>Climate</b></p> <ul style="list-style-type: none"> <li>There is a consistent climate of respect for students' ideas, questions, and ways of thinking about and understanding math/science.</li> <li>The climate of the lesson encourages students to generate ideas, questions, conjectures, and/or propositions.</li> </ul> <p><b>Classroom Management</b></p> <ul style="list-style-type: none"> <li>Teacher manages classroom resources, including time and structure necessary to explore mathematical/scientific ideas, and student behavior in such a way that supported orderly, focused and active participation of students in the lesson.</li> </ul> <p><b>Equity</b></p> <ul style="list-style-type: none"> <li>Teacher encourages <b>all</b> students to achieve, including paying attention to and supporting alternative reasoning strategies.</li> </ul> <p><b>Rigor</b></p> <ul style="list-style-type: none"> <li>Intellectual rigor, constructive criticism, and the challenging of ideas are valued.</li> </ul> <p><b>Collaboration</b></p> <ul style="list-style-type: none"> <li>Interactions reflect productive, collaborative working relationships among students, when appropriate.</li> </ul> <p><b>Grouping Strategies</b></p> <ul style="list-style-type: none"> <li>Teacher displays an understanding of when, why, and how to group students so that students work independently or collaboratively to make sense of mathematics/science thereby creating a community of learners.</li> </ul>