

Sample Inquiry Design Plan

Teacher Name: Jeanine Sheppard  
 Course: 1<sup>st</sup> Grade  
 Day of the week | Date

**Unit: Illumination**  
**Lesson: Shadow Exploration**

Content Area	<i>Meets standard OR builds towards standard</i>	Standards Addressed:
<b>ELA:</b>		N/A
<b>Math:</b>	Builds Towards	1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
<b>Science:</b>	Builds Towards	1-PS4-3 <b>Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.</b> [Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).] [Assessment Boundary: Assessment does not include the speed of light.]
<b>Social Studies:</b>		N/A
<b>Fine Arts:</b>	Builds Towards	VA.Cr1.1.1 Engage collaboratively in exploration and imaginative play with materials. VA.Cr1.2.1 Use observation and investigation in preparation for making a work of art. VA.CR2.1.1 Explore uses of materials and tools to create works of art or design.
<b>SEL:</b>	Builds Towards	2A.1a Recognize that others may experience situations differently from oneself. 2A.1b Use listening skills to identify the feelings and perspectives of others.

How are students using skills to develop content knowledge?	<ul style="list-style-type: none"> <li>Students will generate questions to develop an understanding of what is happening in the Sesame Street video and the art work by Vincent Bal.</li> </ul>
---	---

## Sample Inquiry Design Plan

	<ul style="list-style-type: none"> <li>• Students will use what they have learned about light, illumination, and shadows to create a piece of art. They will also explore how changing variables (distance between tower and light source, position of light source, etc) changes their shadow picture.</li> <li>• Students will draw a model to explain what how their art was made (identifying the light source, opaque object, transparent and/or translucent objects possibly, and shadow).</li> <li>• Students will use unit cubes to measure shadow size and distance to the light source.</li> </ul>
Materials/Texts Needed:	Computer/projector, light sources (or use sunlight), Legos, Paper, Markers/Crayons
Technology/website used:	N/A
How will you engage the students in the topic?  What hook/phenomena will you use to allow students to ask questions?	Sesame Street Clip - <a href="https://youtu.be/REy9ZMY7LGY">https://youtu.be/REy9ZMY7LGY</a>  Shadow Art – <a href="https://www.thisiscolossal.com/2016/11/vincent-bal-shadow-doodles/">https://www.thisiscolossal.com/2016/11/vincent-bal-shadow-doodles/</a>
What questions will students ask as a result of observing the hook/phenomena?	<ul style="list-style-type: none"> <li>• What causes the shadow?</li> <li>• Does the brightness, position, distance of the light source affect the shadow?</li> <li>• Why don't shadows always look just like the object?</li> <li>• What affects the size of the shadow?</li> </ul>
What will students do to figure out the answers to the questions they posed from the hook/phenomena?	Students are prompted to create their own shadow art. Through the building and testing of their structures to see what shadows are produced they will explore/investigate the questions generated above.
How will students use new learning to answer the questions they posed from the hook and/or explain phenomena?	The students will draw a model to show what they think is happening in the phenomena. After they have had the chance to explore as they create their artwork, students can revise their model by adding what they have learned.
What are some related phenomena/situations that students could explore?	Shadow puppets, sun dials, moon phases
How will students show you what they have learned?  How will you use this information in your instruction?	Students have the model they drew before and revised after the shadow exploration.  If students' individual models are not showing all of the information intended for them to arrive at, we will complete a model together as a class.

## Sample Inquiry Design Plan

<p>What will you do if they do not meet the expected learning targets?</p>	
<p>How will students act on their new knowledge?</p>	<p>Students could propose art work that could dress up the exterior of the school.</p>
<p>How will students build on their new learning?</p>	<p>Students could explore shadows generated by objects around the school yard (playground equipment, signs, etc.) and generate ideas for creative ways to utilize the shadows. Students could also explore how the shadows change throughout the school day as the sun changes position in the sky.</p>
<p><b>Reflection Questions:</b></p>	<ol style="list-style-type: none"> <li>1. How will you ensure students are driving the learning? What facilitative strategies are you using to guide learning instead of directly instruct? <ul style="list-style-type: none"> <li>• Driving question board</li> <li>• Use the Talk Science talk moves to facilitate discussions and push the students to do the thinking and explaining</li> <li>• Modeling (individually or as a class)</li> </ul> </li>   <li>2. In what ways could diverse students express their learning in this lesson? <ul style="list-style-type: none"> <li>• Students could explain their understanding verbally or draw and label a model.</li> </ul> </li>   <li>3. In what ways could diverse students be engaged in this lesson? <ul style="list-style-type: none"> <li>• Students could share stories about experiences they have had with shadows.</li> <li>• Provide a variety of examples of Vincent Bal's artwork for students to consider and explain.</li> </ul> </li>   <li>4. What are the different levels of teacher support that diverse students may need in this lesson? <ul style="list-style-type: none"> <li>• Some students may be comfortable drawing and labeling their models individually while others may need the support of developing the model as a class.</li> <li>• Some students may need support as they build their structure and position their light source.</li> <li>• Different size Lego/Duplo blocks can be used depending on dexterity and fine motor skills.</li> </ul> </li> </ol>