Introduction to Solutions

Background
A solution is a special type of *mixture* in which one substance, the *solute*, dissolves into another substance, called the *solvent*.

Problem
Is there a limit to the amount of solute (salt) that can be dissolved in a given amount of solvent (water)?

<table>
<thead>
<tr>
<th>Container One</th>
<th>Container Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. In the space below, illustrate what happened when the salt was added to the water.</td>
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</tr>
<tr>
<td>2. Explain why the salt seemed to disappear.</td>
<td>2. Did all of the salt seem to disappear? Why do you think this happened?</td>
</tr>
<tr>
<td>3. Is the salt water a simple mixture or a solution? Explain your thinking.</td>
<td>3. Would you classify the salt and water as a simple mixture or a solution?</td>
</tr>
</tbody>
</table>
4. Predict what would happen if we added more salt to the container. Draw an example of how this might appear.

4. Which variable was changed between the two containers?

5. Draw a picture or write an explanation to predict what would happen if more water was added to the container.

**Analysis**

1. Based on your observations, is there a limit to the amount of solute (salt) that can be dissolved in a given amount of solvent (water)? What evidence do you have to support your thinking?
2. With your group, discuss the “Read” information in the box below. How do you think this will affect the salinity of the ocean (do you think it will increase, decrease, or stay the same). Record your thinking below.

**Read:** Global warming has caused the Earth’s polar ice caps to melt faster each year. This is introducing more water into Earth’s oceans. Scientists who study the environment are concerned with how this will affect the salinity (the amount of salt in a specific amount of water) of the ocean.

3. With your group, develop a model that could be used to show polar ice caps melting. Draw a picture or write an explanation for your model below.