

## FINAL

5/01/06

### Activity 12: Science Tales' *Goldisocks*

(Why Does Matter Have Energy?)

game\_matterenergy.swf

Grade 4 (Note to Editorial: Also correlates to g3, Chapter 13, Lesson 3)

#### I. Key concept

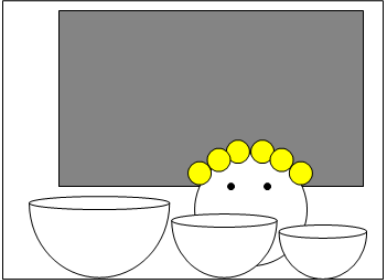
Help student distinguish visually between:


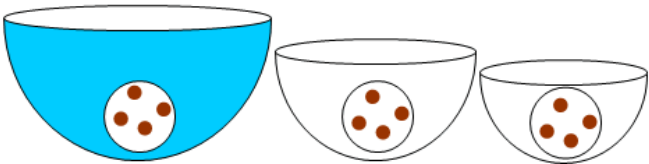

1. Thermal Energy
2. Heat
3. Temperature

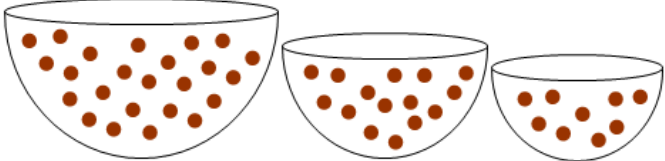
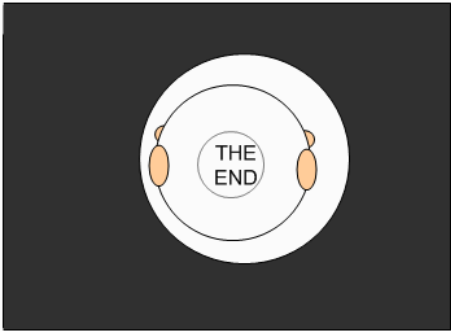
#### II. Main Activity

Style: Fractured Fairy tales. Animated storybook (plays out like cartoon).

Audio ref.: <http://www.dailywav.com/0203/mrknowital2.wav>

audio	image notes	script
page01.wav		<p>(harp + narr_01)</p> <p>Once upon a time, a young girl named Goldisocks visited the school cafeteria to eat lunch. She had many options!</p> <p>(goldi_01) Porridge, porridge, or porridge. Which will I choose?</p> <p>{Repeat} {Next}</p>
page02.wav	<p>Note: Bowl cutout is same size for all (to imply average). Student is comparing speed (not number) of particles.</p>	<p>(narr_02) She used a thermometer to measure the temperature of each bowl.</p> <p>Porridge is matter. And all matter is made of moving particles. (show bowl cutouts sequentially to reveal moving particles in each bowl. bowl1=fast, bowl2=slow, bowl3=medium)</p> <p>Her thermometer measured the <b>average speed</b> of particles in each bowl.</p>

		 <p>{Repeat} {Next}</p>
page03.wav	<p>Pop in thermometer over first bowl. It hovers. Click thermometer to:</p> <ul style="list-style-type: none"> <li>- dip thermometer into porridge</li> <li>- play page_03.wav</li> </ul> <p>Note: Show markers (not numbers – unless legible) on thermometer.</p> <p>Each thermometer starts at same marker (ie. room temp) and animates to porridge temperature.</p>	<p>(dip + narr_03) The particles in the first bowl moved slowly.</p>  <p>(goldi_03) The temperature is <i>too low!</i></p> <p>{Repeat} {Next}</p>
page04.wav	<p>Pop in thermometer over second bowl. (Thermometer is still submerged in first bowl.) It hovers. Click to:</p> <ul style="list-style-type: none"> <li>- dip thermometer into porridge</li> <li>- play page_04.wav</li> </ul>	<p>(dip + narr_04) The particles in the second bowl moved fast!</p> <p>(goldi_04) The temperature is <i>too high!</i></p> <p>{Repeat} {Next}</p>
page05.wav  slurp.wav	<p>Pop in thermometer over third bowl. It hovers. Click to:</p> <ul style="list-style-type: none"> <li>- dip thermometer into porridge</li> <li>- play page_05.wav</li> </ul>	<p>(dip + narr_05) The particles in the third bowl moved neither too fast nor too slow!</p> <p>(goldi_05) The temperature is <i>just right!</i> (Cut to Goldi slurping out of bowl.)</p> <p>{Repeat} {Next}</p>
page06.wav	<p>Show cross-section of 3 bowls. Now, particles move at same speed.</p>	<p>(narr_06a) Goldisocks returned the next day to eat lunch. But unlike the day before, the porridge was <b>all</b> the same temperature. The particles in each bowl were moving at the <b>same</b> average speed. How could she differentiate them?</p> 

		(goldi_6) I usually pick just one! {Repeat} {Next}
page07.wav	Expand cross sections to show outlines of entire bowls (so total number of particles is visible in each bowl).	(narr_07a) If the porridge is made of moving particles, it has <b>thermal energy</b> . If there's more porridge, there's more thermal energy! We feel the movement of thermal energy as <b>heat</b> .  (goldi_07a) Wait a minute! Three bowls of porridge can have the <b>same</b> temperature, but <b>different</b> amounts of heat?  (narr_07b: to Goldisocks) That's right, Goldisocks! (resumes narration) The first bowl was the largest. It had the most moving particles or thermal energy.    (goldi_07b) It has the most heat! {Repeat} {Next}
page08.wav		(narr_08) The third bowl was the smallest. It had the <b>fewest</b> moving particles or the <b>least</b> thermal energy.  (goldi_08) It has the least heat!
page09.wav slurp.wav		(narr_09) The second bowl was medium-sized. The amount of thermal energy was just right!  (goldi_09) It has just the right amount of heat! (Cut to Goldi slurping out of bowl.) {Repeat} {Next}
page10.wav	<b>The End</b> appears on bottom of bowl. Black mask bleeds in to surround bowl.	(narr_10) Tune in next week when Goldisocks picks out a bowl of borscht that is <i>just right!</i> <i>The End</i> .    {Start over}