



## Grade 6 Science: From Linear to Systemic Thinking Scientific Research

(Submitted by Mónica Zuñiga, 2017, while serving as Science Teacher at Colegio Interamericano de Guatemala)

<b>Tool(s) used:</b>	<ul style="list-style-type: none"> <li>• Sustainability Compass</li> <li>• Systems Mapping</li> </ul>
<b>Purpose of using tool:</b>	<ul style="list-style-type: none"> <li>• Research</li> <li>• Synthesizing Thinking</li> <li>• Guiding Discussion</li> </ul> <p><b>Overview:</b> The goal of using both the Sustainability Sompass and the System Mapping was to introduce student to systemic thinking, so they can understand the Science, and life is not a linear process, making it easier for them to analyze problems and create solutions.</p>
<b>Context of lesson/case study:</b>	Science Grade 6 Teachers (whole school for PF)
<b>Participants (# and description):</b>	Sixth graders , 10- 12 year old students
<b>Topic, Theme, or Key Understanding of unit/project:</b>	The Scientific Process / From Linear to Systemic Thinking Scientific Research
<b>Length of unit/project:</b>	1 week
<b>Resources/materials &amp; setting required:</b>	Copies with the Sustainability Compass tool; Poster; Power Point presentation (BORNEO); Cards - Borneo facts; Wool; Markers
<p><b>Lesson Plan/Description of the Project:</b></p> <p><b>Part 1</b></p> <ol style="list-style-type: none"> <li>1. Present the power point presentation with the picture and names of the different facts. Class is divided into pairs, each pair is creating a cause and consequence table for the assigned fact.</li> <li>2. Share with a group</li> <li>3. Stay with the group you worked before. Look at the events presented to you. Create a diagram that show sequence that connect them. Use cause and consequence as a referent to make connections. Use arrows to show connections.</li> <li>4. Share your posters with the class.</li> <li>5. Let's find out the real sequence! Watch the video.</li> <li>6. Based on both, the video and your diagram create a new diagram that shows connections. Make arrows from the cause to the effect and make as many connections as you can.</li> <li>7. Teacher present the circle, to map systems.</li> <li>8. Students map the situation.</li> </ol> <p><b>Part 2</b></p> <ol style="list-style-type: none"> <li>1. Introducing the Sustainability Compass tool.</li> <li>2. Analyse how spreading DDT in Borneo affected the island. Use the Compass tool.</li> </ol>	





### Part 3

- Take students outside. Make two groups.
- Each group gets a set of cards and wool. Cards are given to each student, so she or he is representing a fact. Connections are created when passing the wool.

### Teaching tips/ideas:

- Use Borneo or any other story. They loved it!
- Less is more. Give short and specific instructions.
- Team work is the key, so discussion can be created.

### Reflection

#### Plusses:

- After I introduced compass tools, students can easily analyse situations. We used it to analyse problems and solutions. We even used it to analyse the impact of using poster boards for Science Fair. After that we decided to go digital and present in the devices.
- Student's thinking is changing, now they can fully understand how everything is connect. I have noticed that the way they approach scientific questions has changed. I have also seen them using the tool to analyse how behavior problems affect the group, mainly with my homeroom group.

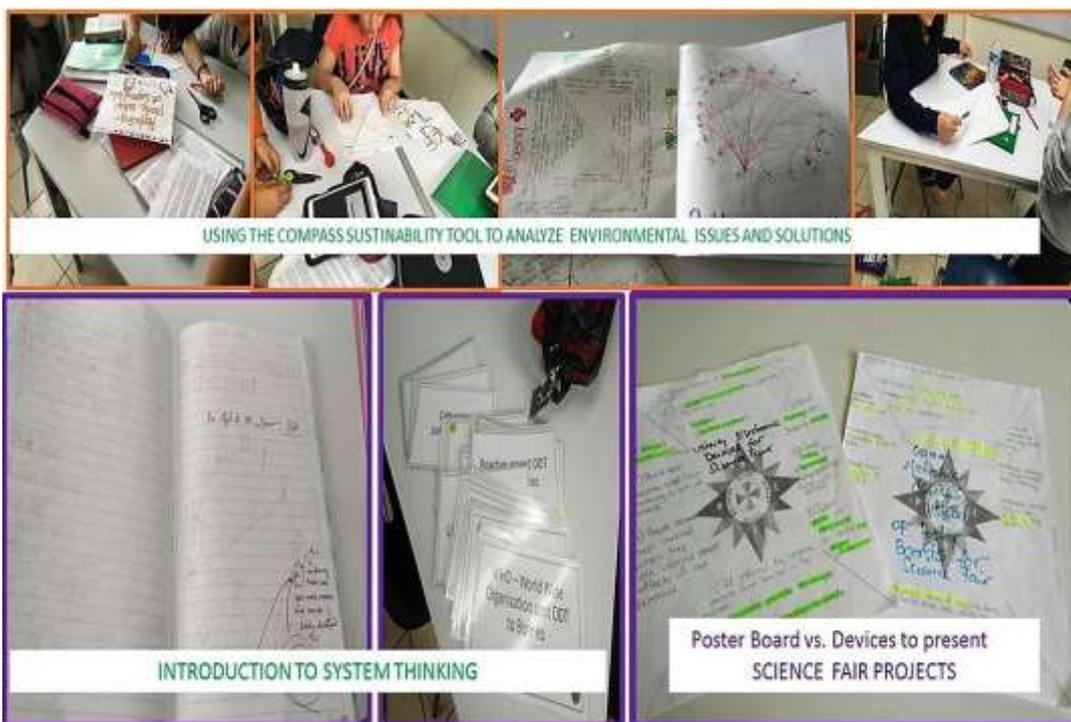
#### Challenges:

- I will definitely give them more time for each part.
- I will do cards and wool before mapping the system in the circle.

### Suggestions for other practitioners and educators:

Believe it makes the difference! If we can change the kids think then we can change the way solutions are created!

### Evidence and Resources:



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