



Grade 8 STEM Project: We Can Support Sustainable Development Starting With a Project in 8th Grade

(Submitted by Britta McCarthy, 2018, while serving as Science Teacher and Coach at the Columbus School, Colombia)

Tool(s) used:	<ul style="list-style-type: none"> • Sustainability Compass
Purpose of using tool:	<ul style="list-style-type: none"> • Research <p>Overview:</p> <p>In our 6-8th grade STEM project, we used the Sustainability Compass to research a Sustainable Development goal in the Colombian context. This was a powerful exercise in terms of increasing student awareness of how the goal is being worked on and how related problems manifest themselves in their local setting. It also provided more accurate and well rounded discussions and presentations rather than proliferating stereotypes and one-sided or linear thinking.</p>
Context of lesson/case study:	Middle School STEM project
Participants (# and description):	114 grade 8 students working in teams
Topic, Theme, or Key Understanding of unit/project:	We can support sustainable development starting with a project in 8th grade
Length of unit/project:	2.5 months
Resources/materials & setting required:	Computers and internet access, permission from parents and administration for off campus work
Lesson Plan/Description of the Project:	
<ol style="list-style-type: none"> 1. We did a Gallery walk with the 17 Sustainable Development Goals to check student prior knowledge (K) and Questions (W). 2. Students looked at what students already knew and wanted to know, and presented on the SDG in small groups with the answers to what students wanted to know, and facts pertaining to Colombia (L). 3. Students grouped themselves into teams that wanted to work on a certain goal, and defined a problem in our local context related to that SDG. 4. Students did a collaborative research Compass on the problem they defined. 5. Students met with a mentor (fellow teachers that had been trained to use prompting questions focusing on interrelationships and complexity) to discuss their research compass. 6. Students revised their Compass based on mentor feedback, and found additional visual data representations related to their Compass in ourworldindata.org. 7. Students used divergent and convergent thinking tools to generate ways of solving the problem, coding the criteria, constraints, conditions related to their solution and then used a decision matrix to rank their solutions. 8. Students began either an Engineering design Process, or Design Thinking process to make their first iteration of their solution. 	





9. Students work with mentors to test and get feedback on their first iteration and make improvements.
10. Students develop an improved solution and present it at the SySTEMs fair.

Reflection

Plusses:

- Using SDG's as a base for student learning helps to empower students to help a global change at a local level.
- Using the Compass to showcase and deepen research helped teams collaborate and increase their knowledge together. This approach also fights misconceptions, linear thinking, or relying on opinions or stereotypes.
- Having students work with mentors from a variety of backgrounds helped to increase their knowledge and empathy base.
- Having students work with mentors, work with other organizations, come up with new campaigns, and share with our school community gave this project a high degree of impact and authenticity. Some projects will continue into Global Issues Network club or student service projects outside of middle school.

Challenges:

- Next time I would plan this over more time to allow the process of iteration to continue for longer.
- I would like to connect our students with more mentors outside our school community.
- I would like to embed more systems tools into the process, beyond the Iceberg.

Suggestions for other practitioners and educators:

- Link your systems tools into PBL units for even more authenticity and sustained inquiry.
- Create norms for how students and mentors interact.
- Have a pre-made inventory of parents, staff, and local stakeholders that are experts (or just willing to work with students) on SDGs. We had mentors from several countries, various universities, and local businesses.
- Try, and modify!

Evidence and Resources:

[13a STEM Climate Action 2018](#)

