Standard Benchmarks and Values

**HCCPS 111- Benchmark SC.BS.2.1** - Explain how scientific advancements and emerging technology have influenced society.

*(Students practice this benchmark by noting how technology, society, and biology relate to each other and influence each other.)*

**Common Core- 9-10.W.2** - Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

*(Students will demonstrate mastery of this standard, as they will be given little guidance or prompting, and will have to present and tie together rich information relating to two to three topics.)*

**NHMO- 14** - Plan for meaningful learner outcomes that foster the relationship and interaction among people, time, space, places, and natural elements around them to enhance one’s ability to maintain a “local” disposition with global understandings.

*(Students will be introduced to this way of thinking through their experience in the gardens and their reflections and further research.)*
How can we look at the field of Biology as it relates to everything in our world, and is also used practically to explore and understand our world?

Enduring Understandings
• The field of Biology is far reaching, and goes way beyond lab and fieldwork.
• “When we try to pick out anything by itself, we find it hitched to everything else in the Universe” – John Muir

Critical Skills and Concepts
• Students will know that the natural world is extremely dynamic.
• They will be able to see themselves and their choices as a part of the global dynamic.
• They will be able to use information that they gathered from a personal, place based learning experience to explain local and global dynamics as they relate to the field of Biology.
• Students will be able to take two to three broad topics, for example, ecology, technology, and trees, and synthesize and essay that explains how the three are or can be interrelated. They will be able to write about how each affects the other.
Authentic Performance Task

Students will choose two to three broad topics from the list below and synthesize a three page essay that explains how they are or can be interrelated within the field of Biology. The inspiration for their topic selection and writing should come from a field trip to the National Tropical Botanical Garden (NTBG) in Lawai. They are to take notes and decide from there what to write about. They should also research further into their chosen topics. The common core standards and NHMO values mentioned above will be assessed for all students, and some students will be able to use their essay to show proficiency in the HCCPS standard mentioned above.

- Ecology
- Technology
- Numbers
- Any clade of organism represented in the garden
- Politics
- Economy

- History
- Geography
- Environment
- Evolution
- Diversity
- Culture

Authentic Audience
Teachers, parents, other students, scholars. Future biology students.

Other Evidence
Students will show growth in the area of creativity and out of the box thinking. They will not be simply regurgitating information in their own words, they will be realizing connections and expressing them in writing. Expect students to have a lot of questions, and to want more direction. The point of this writing task is to allow them to find their own direction, and to be comfortable with that. Also teachers should allow for a lot of freedom in this essay. Grading is not based so much on structure or grammar, but on depth of thought and scope of information used to form connections.
Learning Plan

Students will need to either participate in the field trip, or find inspiration from another place that they know of, or do some research. They will need to be able to find value and meaning in their experience, and take good notes. They will need to be able to see a connection between topics, and more importantly the interconnectedness of all things living and non-living. They will need to be able to write cohesive paragraphs, and combine them into an essay.

Day 1-Lesson Introduction: Students will be given the list of topics and ten minutes to choose two that they think are related. They are to write a sentence or two about how the two are related, how one affects the other, how they work together, etc... Next, students will share out their thoughts to the class. Next, I go over the details of the field trip, and what I expect from the essay. I tell them that they need to take good notes, and find an aspect of the trip that they can really connect with, whether it be one particular type of plant, the buildings, the garden, the history of the place, the guide, whatever they are most interested in.

Day 2-Field Trip: Students are greeted by a guide/docent and are given an introduction to the garden. They are also given a lesson on plant diversity and DNA technology that is used to identify new species and find relationships and evolutionary histories among different types of plants. Next, we go into the Herbarium and learn about how specimens are preserved and stored, and see the collection of books. Finally, we go down into the garden and start to view some of the different plants, the infrastructure and waterways. Finally, we end the trip by pulling out invasive weeds in a section of the garden. (Students who do not attend the trip must research about NTBG, and then do some extra research about something that interests them within the field of Biology.) Upon return to the classroom, if time, students write down any questions that they have as a result of their experience.

Day 3-Writing: Students take some time to reflect and write about some of the highlights of the trip. This is free journalling, and they can use their notes if they want. Then can discuss with neighbors if they want to. The idea is that they will start to recognize (if they haven’t already) the topics that they will be writing about. Next they will use their notes to fill in any details. They will also use chromebooks or computers to research any questions that came up for them.

Day 4- Outlines/Rough Drafts: Students will fill in a graphic organizer to make the outline for their essay. (See resource) Then they will begin writing their first drafts. They can take a break part way through the period to share their work with a neighbor and get feedback.

Day 5- Final drafts: Students will write their “almost final” drafts, have a peer look over, and then do final revisions before submitting. Students will be given a week after I grade them to make any corrections or additions in order to achieve higher marks.