

A Collaborative Virtual Air Quality Learning Experience with Kakenya's Dream (Resource Exchange, Diversity)

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The curriculum we developed for this collaborative project focused on introducing the students and instructors to the importance of air quality (AQ), its impacts on our health, and how we can utilize AQ monitoring to create informed, sustainable decisions that improve the AQ we experience. This resource will describe the learning objectives and module sessions focused on the AQ monitoring as they were utilized for upper middle and high school grade levels (7th-11th grades).

Project Overview	
<ul style="list-style-type: none"> • Over the course of the project, we worked with both the 7th and 11th grade classes at Kakenya's Dream, 20 and 27 students, respectively. • The curriculum and subsequent module sessions focused on introducing students to the importance of air quality (AQ) and its impact on health through a problem-based, citizen science-focused educational experience • The full curriculum had 7 Learning Objectives (LO) that distilled into module sessions with the students (9 for 7th grade and 15 for 11th grade) 	
Delivery Methods	Project Impact
<ul style="list-style-type: none"> • Zoom was utilized as the delivery platform <ul style="list-style-type: none"> ○ YouTube videos were used to reinforce learning during some sessions • Mailed a PurpleAir PA-II-SD monitor for the students to use on the KD campus during the project • The curriculum was delivered to students in 60-minute weekly module sessions <ul style="list-style-type: none"> ○ Continuous active learning and collaboration among and with students with virtual guidance 	<ul style="list-style-type: none"> • Worked with 47 students and 3 teachers over the course of the project • Summative assessments were developed and administered to assess student learning <ul style="list-style-type: none"> ○ 7th grade class average: 82% ○ 11th grade class average: 66% (*Note: Due to scheduling conflicts, 11th graders were assessed one year following module sessions) • Students reflected positively about their experiences and highlighted how much they learned about AQ
Learning Objectives and Modules Focused on AQ	
Module Session 4 <u>LO 4. Developing Competencies with Air Quality Monitors</u>	
<ol style="list-style-type: none"> 1. Reviewed Module 3 Activity Logs - students kept a weeklong activity log to see how things they did could impact their AQ 2. Learning the Basics of IAQ Monitors <ol style="list-style-type: none"> 2.1. Defined IAQ Monitors - Provided general definition about IAQ monitors 2.2. IAQ Monitor DNA – Explored the parts of an IAQ monitor (*Note – Depending on grade level, students may not be familiar with the term DNA and what that means so we needed to adapt this title for the 7th graders.) 2.3. Exploring Different Types of IAQ Monitors <ul style="list-style-type: none"> • Provided examples of different types of IAQ monitors (e.g. Aethalometer, Particle Counter, Air Probe, etc.) 3. Learning about the PurpleAir PA-II-SD Monitor 	

- 3.1. Explored PurpleAir website including the map of monitors around the world.
- 3.2. Walked through the parts of the sensor using example sensor that we (the virtual instructor) had.
 (*Note – At Pitt, we had the same monitor so we were able to talk about the monitor through both pictures on the slides and physically over Zoom.)
4. To prepare for the next module, we instructed the students to consider what places or areas they want to set up the monitor to collect data.

Module Session 5

LO 5. Creating a Monitoring Program and Collecting Data

1. Reviewed major takeaways from previous modules
2. Creating a Monitoring Plan
 - 2.1. Defined what a Monitoring Plan is for the students
 - 2.2. Think-Pair-Share Exercise on brainstorming AQ monitoring locations
 - 2.3. Finalized the Monitoring Plan (locations, monitoring time, student groups)
 *Note: The monitor plan included monitoring in each location for at least five consecutive days to gather enough data for comparative purposes.
 - 2.4. Defined responsibilities for Logging – reviewed responsibilities the students would have while their group was monitoring.
 *Note: It could be helpful to have printouts of the responsibilities for students to review during their monitoring week. We reviewed them in each subsequent session.
3. Collecting the AQ and IAQ Data on the KD Campus
 - 3.1. Enacted the Monitoring Program - During this time, the format of each session included checking in with the student groups, giving students the opportunity to share what they learned or saw, and then preparing the next group to set up the monitor in their location and reminding them of their monitoring responsibilities.

(*Note: While working with the KD students, there were scheduled exams and school breaks which conflicted with module sessions at different times during the project.)

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KAKENYA'S DREAM
Empowering Girls, Transforming Communities

