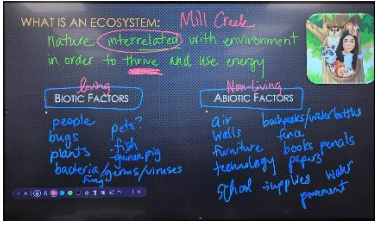

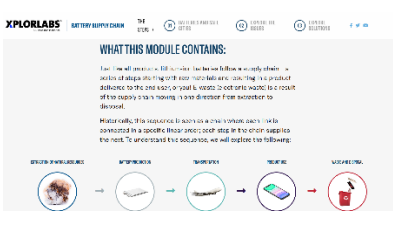
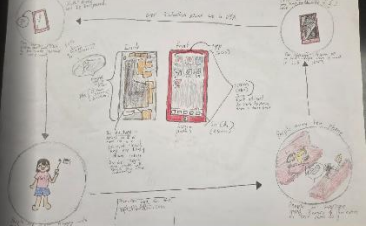


Cell Phone Ecosystem Infographic, using Xplorlabs: The Science of Extraction to E-Waste

Students imagine the ecosystem associated with a cell phone and examine the impact mobile devices make on their individual and global ecosystems. Student groups collaborate with peers to create an infographic communicating the components of a cell phone's impactful ecosystem.

	Engage	Explore	Explain	Elaborate/Extend
Part of the Pathway				
NGSS	<p>MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</p> <p>MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.</p> <p>MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</p>			
Time	20 minutes	40 minutes	20 minutes	60 minutes
Overview	<p>Activate students' prior knowledge about ecosystems and their components. Together as a class, formulate a working definition of an ecosystem, and create a table of biotic and abiotic factors in your school's ecosystem.</p> <p>Students then individually examine the question: What is the ecosystem of a cell phone? Have students each</p>	<p>Explore the structure of cell phone batteries in the Xplorlabs pathway, focusing on the components and connections found in the supply chain section. Students notice and wonder about their structure and function.</p> <p>Using the information gathered from the pathway, students experience the impact resourcing those</p>	<p>Obtain and evaluate information from Xplorlabs pathway to understand how resource availability, bacteria, thermal energy, and human activity affect individual cell phones, usage, cellular company protocols, and global cell phone environments.</p> <p>Students jigsaw the solutions given in the concluding section with group members,</p>	<p>Students transfer their understanding about cell phone components, lifespans, usage, and human impact to create a visual infographic depicting a cell phone's ecosystem.</p> <p>Students argue why these ecosystems are consistent with other global ecosystems and their patterns for interactions of thermal energy and matter.</p>

	<p>create a table or word splash of biotic and abiotic factors in such an ecosystem, including connection arrows to showcase any interactions between factors.</p>	<p>components has on the surrounding environments by participating in a mineral excavation lab. Students should be led to consider the interaction between the biotic and abiotic factors of the environment.</p>	<p>noting the impact cell phones have on connected ecosystems.</p>	<p>Students also begin to imagine other impacts that influence human cell phone usage and design solutions to produce future protocols and policies.</p>
<p>Supporting Resources</p>	<p>Extraction to E-Waste Crosscutting Concepts Xplorlabs Xplorlabs-Modeling-Mining-Processes.pdf Science - Georgia Standards of Excellence</p>			