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| **Teachers** | Science 7 team | **Subject Group and Discipline/MYP Year** | Science  Life Science  Year 1 |
| **Unit Title** | Ecosystems & Cycles | **Unit Duration** | 8-9 weeks |

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| Key Concept | Related Concept(s) | Global Contexts |
| Systems | Balance, models | Scientific and technical innovation (systems, models, methods; products, processes & solutions) |

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| Statement of Inquiry |
| Scientists use models to evaluation how natural systems operate. |
| Inquiry Questions |
| Factual: What are some of the most common/important cycles in nature?  Conceptual: How do biotic/abiotic factors interact? How does human activity impact natural systems?  Debatable: Can an individual make a difference in their community? |

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| Objectives | Summative Assessment | Summative Justification |
| Criterion A:  i. outline scientific knowledge  ii. apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations  iii. interpret information to make scientifically supported judgments.  Criterion D:  i. summarize the ways in which science is applied and used to address a specific problem or issue  ii. describe and summarize the implications of using science and its application to solve a specific problem or issue, interacting with a factor  iii. consistently apply scientific language to communicate understanding clearly and precisely  iv. document sources completely. | Goal: Students will identify local issue related to unit topics, suggest a solution, and advocate for the solution.  Role: Citizen of Reston  Audience: Fellow citizens & Reston elected officials  Situation: Students will choose a local environmental issue  Product: Letter to the editor  . | Students will use a model ecosystem to evaluate how natural systems operate. They will use their knowledge of cause and effect from this to advocate for a  solution to a local issue. |

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| Approaching to Learning |
| Criterion A:  In order for students to outline scientific knowledge, they must use information literacy to collect, record and verify data  In order for students to apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations, they must use information literacy to collect and analyse data to identify solutions and/or make informed decisions  In order for students to interpret information to make scientifically supported judgments, they must use critical thinking to draw reasonable conclusions and generalizations  Criterion D:  In order for students to summarize the ways in which science is applied and used to address a specific problem or issue, they must use creative thinking to use models and simulations to explore complex systems and issues  In order for students to describe and summarize the implications of using science and its application to solve a specific problem or issue, interacting with a factor, they must use critical thinking/transfer skills to combine knowledge, understanding and skills to create products or solutions  In order for students to consistently apply scientific language to communicate understanding clearly and precisely, they must use communication skills to use appropriate forms of writing for different purposes adn audiences  In order for students to document sources completely, they must use information literacy to process data and report results |

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| Content | Learning Process |
| LS.6 The student will investigate and understand that organisms within an ecosystem are dependent on one another and on nonliving components of the environment. Key concepts include  a) the carbon, water, and nitrogen cycles;  b) interactions resulting in a flow of energy and matter throughout the system;  c) complex relationships within terrestrial, freshwater, and marine ecosystems; and  d) energy flow in food webs and energy pyramids.  LS.7 The student will investigate and understand that interactions exist among members of a population. Key concepts include  a) competition, cooperation, social hierarchy, territorial imperative; and  b) influence of behavior on a population.  LS.8 The student will investigate and understand interactions among populations in a biological community. Key concepts include  a) the relationships among producers, consumers, and decomposers in food webs;  b) the relationship between predators and prey;  c) competition and cooperation;  d) symbiotic relationships; and  e) niches.  LS.10 The student will investigate and understand that ecosystems, communities, populations, and organisms are dynamic, change over time, and respond to daily, seasonal, and long-term changes in their environment. Key concepts include  a) phototropism, hibernation, and dormancy;  b) factors that increase or decrease population size; and  c) eutrophication, climate changes, and catastrophic disturbances. | * watershed walk (MWEE & walk around school)   + MWEE - facilitated by USGS or RA   + Walk around school (checklist: where is water coming from/going to/carrying?) * bay-sic ratios demo * HT use models to test systems * set up ecosystems & start taking water qual measurements * biotic/abiotic/limiting factors lesson * water quality lesson * ecosystems & food webs * cycles |

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| Resources |
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| Prior to Teaching | During Teaching | After Teaching |
| PRIOR KNOWLEDGE:   * measurement * graphing * ratios   VOCABULARY:  KEY CONCEPTS:   * ecosystems (food chains, energy transfer, interdependence) * modelling * cycles * scientific drawing/labeling * cause/effect * human impacts |  |  |