# Science High Level Plan

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|  | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Year 1 | **Chemistry**Big Question:Why are our coats waterproof?Powerful Knowledge: Properties of materials that repel water.Themes: Materials, Technological Advancement, Innovation and Technology.Concepts: Everyday Materials.Summative Assessment: Practical activity testing material waterproofing. | **Physics**Big Question: Why do leaves change color in autumn?Powerful Knowledge:Observing and understanding seasonal changes.Themes: Environment, Change over Time, Observation.Concepts: Evidence of Change, Seasons.Summative Assessment: Record a weather and leaf-color change journal. | **Biology**Big Question: Are humans animals?Powerful Knowledge: Animal needs for survival.Themes: Living Things, Survival and Interdependence.**Concepts:** Growth, Nutrition, Shelter.**Summative Assessment:**Compare needs of humans and other animals using visual aids. | BiologyBig Question:What makes a perfect home for animals?Powerful Knowledge:How animals adapt to different habitats.Themes:Habitat, Adaptation, Survival.Concepts:Interdependence, Environmental Interaction.Summative Assessment:Create and explain a model of a suitable habitat. | BiologyBig Question: What grows in our garden?Powerful Knowledge:Understanding plant growth and reproduction.Themes:Plants, Sustainability, Observation.Concepts: Life Cycles, Growth.Summative Assessment:Grow a seed and document its stages. | PhysicsBig Question: Why do seasons change?Powerful Knowledge: The cycle of seasons and their impact on life.Themes:Environment, Cycles, Observation.Concepts:Seasons, Environmental Interaction.Summative Assessment: Create a poster showing seasonal changes and their effects. |
| Year 2 | ChemistryBig Question: Why did the third little pig’s house not collapse?Powerful Knowledge: Properties of materials and their strength.Themes: Innovation, Material Culture, Technological Advancement.Concepts: Everyday Materials.Summative Assessment:Test and compare material durability. | PhysicsBig Question:Why do puddles disappear?Powerful Knowledge: Phase changes between solids, liquids, and gases.Themes: Processes, Environment, Change over Time.Concepts: States of Matter.Summative Assessment: Observe and explain water evaporation. | BiologyBig Question: What makes the perfect habitat for animals?Powerful Knowledge: Understanding local and global habitats.Themes: Environment, Adaptation, Survival.Concepts: Habitats, Ecosystems.Summative Assessment: Match animals to their habitats and explain why. | BiologyBig Question:What do animals eat?Powerful Knowledge: Food chains and the relationships between predators and prey.Themes: Interaction, Energy Flow, Interdependence.Concepts:Food Chains, Energy Transfer.Summative Assessment: Draw and explain a food chain. | BiologyBig Question:How do plants grow?Powerful Knowledge: Life cycles of plants from seed to flowering.Themes: Sustainability, Growth, Observation.Concepts: Life Cycles, Photosynthesis.Summative Assessment: Present a plant life cycle diagram. | BiologyBig Question: How do seasons affect plants?Powerful Knowledge: Comparing plant growth across seasons.Themes: Environmental Cycles, Observation, Change Over Time.Concepts: Adaptation, Seasonal Growth.Summative Assessment: Reflect on and compare plant growth in different seasons. |
| Year 3 | BiologyBig Question: How do skeletons support our bodies?Powerful Knowledge: Structure and function of skeletons and muscles.Themes: Structure, Movement, Health.Concepts: Anatomy, Function.Summative Assessment: Label and compare skeletal diagrams of humans and animals. | ChemistryBig Question:Why are rocks so hard?Powerful Knowledge: Properties of rocks and how they are formed.Themes: Materials, Change Over Time, Evidence.Concepts: Rock Types, Fossil Formation.Summative Assessment: Classify rocks and explain their uses. | PhysicsBig Question:Where did my shadow go?Powerful Knowledge: How light behaves and creates shadows.Themes:Energy, Observation, Experimentation.Concepts: Light, Reflection.Summative Assessment: Conduct an experiment tracking shadow changes. | PhysicsBig Question:How can we see things in the dark?Powerful Knowledge: Reflection, refraction, and light paths.Themes: Investigation, Technological Advancement, Cause and Effect.Concepts: Light, Energy Transfer.Summative Assessment: Create a diagram explaining how light reflects and refracts. | PhysicsBig Question: How do magnets work?Powerful Knowledge: Magnetic forces and their effects.Themes: Interaction, Force, Experimentation.Concepts: Magnetism, Polarity.Summative Assessment: Test the strength of magnets on various materials. | PhysicsBig Question: How does friction affect movement?Powerful Knowledge: How friction impacts different surfaces and motion.Themes:Motion, Force, Evidence.Concepts: Friction, Energy Loss.Summative Assessment: Write a conclusion based on friction experiments. |
| Year 4 | ChemistryBig Question: Why do puddles disappear?Powerful Knowledge: The properties and behaviors of solids, liquids, and gases.Themes: Processes, Change, Observation.Concepts: States of Matter, Phase Changes.Summative Assessment: Conduct an experiment to observe evaporation and condensation. | PhysicsBig Question: How does water travel around our planet?Powerful Knowledge: The water cycle and its importance to life on Earth.Themes: Environment, Energy Transfer, Sustainability.Concepts: Cycles, Processes.Summative Assessment: Create a labeled diagram and explanation of the water cycle. | BiologyBig Question: What makes a habitat suitable for life?Powerful Knowledge: How living things depend on their environment and adaptations to habitats.Themes: Ecosystems, Balance, Survival.Concepts: Habitats, Biodiversity.Summative Assessment: Compare two habitats and describe how organisms thrive in each. | BiologyBig Question: How can we sort living things?Powerful Knowledge: Classification of organisms based on observable features.Themes: Organization, Evidence, Observation.Concepts: Classification, Grouping.Summative Assessment: Design a classification key for plants or animals. | PhysicsBig Question: How is sound created and heard?Powerful Knowledge: How vibrations travel through materials to create sound.Themes: Energy, Cause and Effect, Observation.Concepts: Vibrations, Sound Waves.Summative Assessment: Conduct an experiment to explore pitch and volume. | PhysicsBig Question: How can we control electricity?Powerful Knowledge: Building circuits and understanding electrical conductors and insulators.Themes: Energy Transfer, Innovation, Experimentation.Concepts: Circuits, Conductivity.Summative Assessment: Design and test a working electrical circuit. |
| Year 5 | PhysicsBig Question: Why does the Earth spin?Powerful Knowledge: The movement of the Earth, Moon, and Sun, and their impact on time and seasons.Themes: Systems, Observation, Sustainability.Concepts: Orbit, Rotation.Summative Assessment: Create a model showing the Earth's rotation and revolution. | ChemistryBig Question: How can materials change?Powerful Knowledge: Reversible and irreversible changes in materials.Themes: Processes, Experimentation, Innovation.Concepts: Reactions, States of Matter.Summative Assessment: Investigate material changes and present results. | BiologyBig Question: How have living things evolved?Powerful Knowledge: Evolution, inheritance, and fossil evidence.Themes: Time, Adaptation, Evidence.Concepts: Evolution, Natural Selection.Summative Assessment: Create a timeline of key evolutionary events. | BiologyBig Question: Why do animals and plants look like their parents?Powerful Knowledge: Inheritance and traits passed from one generation to the next.Themes: Genetics, Observation, Continuity.Concepts: Inheritance, Variation.Summative Assessment: Investigate inherited traits using visual examples. | BiologyBig Question: How does the circulatory system keep us alive?Powerful Knowledge: Structure and function of the heart, blood vessels, and lungs.Themes: Systems, Health, Survival.Concepts: Circulation, Function.Summative Assessment: Measure and compare pulse rates before and after exercise. | PhysicsBig Question: Can humans live sustainably?Powerful Knowledge: Energy production, renewable resources, and environmental impacts.Themes: Sustainability, Innovation, Energy Transfer.Concepts: Renewable Energy, Sustainability.Summative Assessment: Create a presentation advocating for sustainable energy use. |
| Year 6 | PhysicsBig Question: How does light travel?Powerful Knowledge: Light travels in straight lines, reflection, and refraction.Themes: Observation, Energy, Experimentation.Concepts: Light, Energy Transfer.Summative Assessment: Conduct an experiment to demonstrate reflection and refraction. | BiologyBig Question: How can we classify living things?Powerful Knowledge: Grouping organisms based on complex classification systems.Themes: Organization, Evidence, Adaptation.Concepts: Classification, Diversity.Summative Assessment: Create a detailed classification key for local wildlife. | BiologyBig Question: Why do some species survive while others go extinct?Powerful Knowledge: Adaptation and environmental pressures leading to extinction or survival.Themes: Time, Interaction, Evolution.Concepts: Survival, Adaptation.Summative Assessment: Debate factors affecting the survival of species. | BiologyBig Question: How do humans affect the environment?Powerful Knowledge: Human impacts on ecosystems, including deforestation and pollution.Themes: Sustainability, Evidence, Interdependence.Concepts: Ecosystems, Human Impact.Summative Assessment: Analyze environmental case studies and propose solutions. | PhysicsBig Question: How do circuits power our world?Powerful Knowledge: Advanced electrical circuits and their uses in everyday life.Themes: Energy Transfer, Innovation, Experimentation.Concepts: Circuits, Voltage.Summative Assessment: Build and test a complex electrical circuit. | BiologyBig Question: Is it too late to save the planet?Powerful Knowledge: Global efforts to combat climate change and preserve biodiversity.Themes: Sustainability, Innovation, Interdependence.Concepts: Conservation, Climate Change.Summative Assessment: Create an action plan for reducing environmental impact. |