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**Knowledge Rich Curriculum Plan**

SCIENCE- The Periodic Table



| **Lesson/Learning Sequence** | **Intended Knowledge:**  *Students will know that…* | **Prior Knowledge:**  *In order to know this, students need to already know that…* | **Working Scientifically** | **Tiered Vocabulary and Reading Activity** | **Assessment** | **Support** |
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| ***01***  ***Trends in physical properties*** | *Students will be able to distinguish between a physical property, a characteristic of matter that can be observed and measured and a chemical property, a characteristic of a particular substance that can be observed in a chemical reaction. Students will be able to predict properties of elements based on their position on the periodic table. Metals are on the left-hand side of the PT and a metal a room temperature; the reactivity of metals increases as you go down a group. Non-metals are on the right-hand side of the PT and are gases/liquids and solids at room temperature. Students will be able to describe the trend in melting/boiling points of elements in a group on the basis of their state a room temperature. For example, F and Cl are gases, Br is a liquid and I is a solid at room temperature. This shows that the melting/boiling point increases going down the group. Students will be able to describe trends in the physical properties of elements.* | *Substances can be metals or non-metals (KS2 curriculum). Students will be able to list some evidence of chemical reactions.* | *Predicting properties of elements dependent on the group.*  *Interpreting tabulated boiling point and melting point.* | *Physical Property - a characteristic of matter that is not associated with a change in its chemical composition*  *Chemical property- a property of a substance relating to its chemical reactivity*  *Reactivity - the tendency of a substance to undergo chemical reaction, either by itself or with other materials*  *Inert - chemically inactive* | *Retrieval questions*  *Simple exam questions*  *Homework quiz 1*  *End of topic test*  *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*  <https://www.bbc.co.uk/bitesize/topics/zv9nhcw/articles/zf4pp4j>  <https://www.youtube.com/watch?v=PASHGG8OTvM> |
| ***02***  ***Atomic Model*** | *Students will know that atoms are too small to be visible under any microscope. Scientists are able to predict the structure of the atom as they have ‘never seen’ it. Students will be able to distinguish between a nucleus of a cell, to be the organelle that stores DNA and controls the cell, and the nucleus of the atom, composes of neutrons and protons. Students will be able to identify the force of attraction between the nucleus and the electrons as being due to electric charge. Students will be able to draw the structure of an atom and recognise that it is not drawn to scale. Students will be able to compare the particle models and atomic models. Particle model shows the arrangement of particles in solids, liquids and gases. Atomic model shows the individual particles ‘close up’ so that the subatomic particles can be identified.* | *Students will know that the cell contains the nucleus, stores the DNA and controls the cell.*  *Students will know how a microscope is used to magnify small structures such as cells.*  *Students will know how to draw a particle model of a solid, liquid and a gas.* | *Interpreting and compare diagrams of the atomic model and particle model* | *Atom - the basic unit of a chemical element*  *Charge - the property of matter that is responsible for electrical occurrences, existing in a positive or negative form.* | *Retrieval questions*  *Simple exam questions*  *Homework quiz 1*  *End of topic test*  *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.bbc.co.uk/bitesize/guides/ztgbpbk/revision/2*](https://www.bbc.co.uk/bitesize/guides/ztgbpbk/revision/2) |
| ***03***  ***Periodic patterns*** | *Students will be able to distinguish between a chemical and physical property. Students will be able to use observations to identify substances with similar chemical properties. Students will be able to sequence elements in the periodic table according to their atomic number. Students will be able to state that elements in the same group (vertical column) of the periodic table have similar chemical properties.* | * *The periodic table is separated into metals and non-metals.* * *The periodic table is made up of elements which are substances made of only one type of atom.* * *Students will already know that the periodic table is set into groups and periods depending on the electron arrangement of the atoms.* | *Predicting patterns of properties of elements in the same group* | *Synthetic – Man-made*  *Period- Horizontal rows in the periodic table which signifies the total number of electron shells in an element's atom.*  *Group- Vertical columns in the periodic table that represents elements with similar properties* | *Retrieval questions*  *Simple exam questions*  *Homework quiz 1*  *End of topic test*  *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.bbc.co.uk/bitesize/topics/zv9nhcw/articles/zmpnn9q*](https://www.bbc.co.uk/bitesize/topics/zv9nhcw/articles/zmpnn9q) |
| ***04 Mendeleev’s Contribution*** | *Students will be able to identify that early periodic table was arranged by Atomic weight.*  *Students will be ale to describe how Mendeleev ordered the periodic table according to chemical and physical properties.*  *Students will be able to explain why Mendeleev left gaps in his periodic table to allow for undiscovered elements and how he was proven correct.* | * *Sequence elements in the periodic table according to their atomic number* * *Students will be able to identify elements in the same group of the periodic table have similar chemical properties* | *Analyse patterns in properties of elements in Mendeleev’s periodic table*  *Analyse – Draw conclusions based on why gaps were left in Mendeleev’s periodic table* | ***Devise****: To invent from existing principles and ideas*  *Atomic Weight:* ***the mass of one atom of an element****specifically* | *Retrieval questions*  *Simple exam questions*  *Homework quiz 1*  *End of topic test*  *Summative assessment 3* | *Knowledge organiser (provided on Teams and in class)*  [*https://www.bbc.co.uk/bitesize/topics/zv9nhcw/articles/ztmrr2p*](https://www.bbc.co.uk/bitesize/topics/zv9nhcw/articles/ztmrr2p) |