Core Skills Analysis

Science - Chemistry

- Ebony learned the fundamental concept of combustion as a chemical reaction involving oxygen and fuel to produce heat and light.
- She developed investigative skills by exploring combustion through online experiments or simulations, enhancing her understanding of cause and effect in chemical processes.
- Ebony likely gained awareness of the indicators and products of combustion, such as flame, smoke, and energy release.
- She practiced interpreting experimental data or observations related to combustion, promoting critical thinking and scientific reasoning.

Tips

To deepen Ebony's understanding of combustion, encourage hands-on experiments such as safely burning different types of fuels like candle wax or paper to observe variations in flame and smoke. Integrate cross-curricular projects like measuring temperature changes to connect combustion with physics concepts of energy transfer. Facilitate discussions about real-world applications of combustion, including engines or fire safety, to contextualize learning. Additionally, consider having Ebony research and present on historical inventions related to combustion, fostering broader engagement through storytelling and presentation skills.

Book Recommendations

- <u>The Burning Question: We Can't Burn Half the World's Oil, Coal and Gas. So How Do We Quit?</u> by Mike Berners-Lee: An insightful and accessible overview of combustion's role in energy use and climate change, suitable for young teens.
- <u>Chemical Reactions: An Illustrated Guide to the Elements and Their Compounds</u> by D. J. Pasto: A visual and engaging introduction to various chemical reactions including combustion, tailored to secondary school students.
- <u>The Way Things Work Now</u> by David Macaulay: A richly illustrated book explaining the principles behind everyday machines, including how combustion powers engines.

Learning Standards

- KS3 Science (Chemistry) States of Matter and Chemical Reactions: Pupils should understand chemical reactions including combustion (National Curriculum for England, Programme of Study: Chemistry 2d and 2f).
- Working Scientifically: Developing scientific thinking and investigative skills through controlled experiments and analysis (KS3 Science Programme of Study).
- Mathematics Using data: Measuring, recording, and interpreting experimental results (National Curriculum, Mathematics Section on Data Handling).

Try This Next

- Design a worksheet where Ebony records observations of combustion reactions, noting variables such as fuel type, flame color, and smoke quantity.
- Create a quiz with questions like: 'What are the main reactants in combustion?' and 'What energy forms are released during combustion?' to test comprehension.