Core Skills Analysis

Science

- Learned about basic physics principles such as force and motion by observing how the bowling ball moves and knocks down pins.
- Understood cause and effect relationships by experimenting with different roll strengths and directions to see varying results.
- Gained an intuitive grasp of friction and how the smoothness of the bowling ball and lane surface affects movement.
- Explored angles and trajectories as the student aimed the ball to hit pins, developing spatial reasoning.

Tips

To deepen understanding of physics concepts encountered during bowling, encourage the student to experiment with objects of different weights and sizes to see how mass influences motion and force. Introduce simple measurement tools like a stopwatch or ruler to quantify speed and distance, connecting observations to numerical data. Foster inquiry by asking the student to predict outcomes before each roll and then reflect on whether expectations matched results. Incorporate creative play by designing DIY bowling lanes using household items to explore surface friction and ball movement in varied environments.

Book Recommendations

- Forces and Motion by Jennifer Boothroyd: A colorful book that explains the basic science of forces and motion with simple experiments and clear language suitable for young learners.
- Bowling Alley Science: How Things Roll and Bounce by Terry Jennings: This book uses bowling metaphors to introduce physics concepts like friction, force, and trajectories to elementary students.
- Motion: Push and Pull, Fast and Slow by Darlene R. Stille: A beginner-friendly book that explores how motion happens through pushes and pulls, perfect for children interested in how things move.

Learning Standards

- CCSS.ELA-LITERACY.RI.2.3 - Describe the connection between a series of scientific ideas or concepts.
- Next Generation Science Standards (NGSS) 2-PS1-1 - Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties, relating to properties of bowling balls and lanes.
- NGSS 3-PS2-1 - Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

Try This Next

- Create a worksheet that asks the student to draw the path of the bowling ball and label forces acting on it.
- Design a quiz with questions about why the ball slows down, what affects how many pins fall, and the effect of different rolling speeds.

Growth Beyond Academics

This activity likely supported the student in developing focus and patience as they learned to aim and adjust their technique for better results. Experimenting with cause and effect may have sparked curiosity and motivated perseverance, while sharing the experience in a social setting could

encourage cooperation and turn-taking.