A tree at bedtime investigation: Connecting mathematics, science, and literature

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Main content

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When children experience mathematics and science in ways that relate to their own day-to-day lives, meaningful learning takes place. From simple concept books to more elaborate informational books, many books present mathematics and science concepts that children see in their own world. Children can build new knowledge or expand their existing understanding; they can refine and reorganize what they already know; and they can make connections among the concepts as they learn more about them (Columba, Kim, & Moe, 2005).

Seymour Papert (1980), who created the computer language Logo, said, "Children learn by doing and by thinking about what they do." Children are actively engaged when classroom learning focuses on discovering patterns and relationships, solving problems, connecting to real-life situations and authentic problems, and reasoning skills (Pang & Good, 2000).

Activities that promote "active thinking" help children learn mathematics and science by allowing them to work at forming relationships, making connections, and integrating concepts and procedures. Dynamic and exciting children's books invite and motivate children to learn mathematics and science by responding to stories, characters, and their experiences.

According to the National Research Council (NRC, 1996), inquiry is the "shifting of emphasis from teachers presenting information ... to students learning science through active involvement." This type of learning requires imagination as students figure out the inner workings of our world and its myriad connections. Quality children's literature is the ingredient that nurtures children's imaginations and fosters its growth (Columba et al., 2005).

Standards and Expectations

An investigation using Hush-a-bye Babies (Slingsby, 2001) directly connects to the National Science Education Standards (NRC, 1996) for Life Science, PreK-2. The primary focus is on understanding the meaning of environment and habitat--more specifically, how habitat and environment differ for different living things. The overall goal is to encourage the use of higher level thinking skills (synthesis, analysis, and evaluation). The students will be creating homes for different animals in a tree environment and discussing animals that are active during the day and those that are active at night. In their Investigation Record (Appendix B), the students will record how a tree can be a home for animals. The National Council of Teachers of Mathematics (NCTM) Standards (2000) for Measurement (specifically, for telling time) also align with this investigation. The students will record in the Investigation Record (Appendix B) what time they go to bed and draw the hands on the clock. Teachers can adapt the activities to better match their students' strengths and the local curriculum.

Materials

An illustration of a tree or Tree...

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