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Using analogical comparison to help children learn the day-night cycle

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Abstract: Children have difficulty reconciling their observations of the sky (an Earth-based perspective) with scientific models of the solar system (space-based perspectives) (e.g., Vosniadou & Brewer, 1994). Analogical comparison could be an effective way to address this cognitive challenge. By comparing and aligning different perspectives on events, such as sunrise, children may develop a more coherent understanding of the solar system. The present experiment tested this theory by varying the presence of explicit comparisons between Earth-based and space-based perspectives during a multi-day lesson about the day-night cycle. Children (N=63, Mean age=8.57) were randomly assigned to one of four learning conditions: one that involved guided comparison of perspectives, two that involved similar tasks but without comparison, or a control (no instruction) condition. We found that children in the guided comparison condition had the greatest learning gains on a task that involved demonstrating the day-night cycle using a model Earth and Sun.