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The Biology Card Sorting Task is designed to probe how individuals' conceptual knowledge of biology is organized. Modeled on similar tasks developed in cognitive psychology, the task is designed to test two hypothesized organizations: 1) a surface feature organization focused on organism type and 2) a deep feature organization focused on fundamental biological concepts. Sixteen biology problems were selected for this task. The upper left image depicts a hypothesized card sort based on deep features of the problems that might be expected from a biological expert. The lower right image depicts a hypothesized sort based on surface features of the problems that might be expected from a biological novice. Identifying letter colors in the images correspond to the following deep features: green for evolution, blue for structure–function, purple for information flow, and red for transformations of energy and matter. Cards used in the research study (see p. 628) contained only black lettering, and the identifying letter on each card was less prominent. (Photo credit: Paul Asper, San Francisco State University)