



Photo 2. The movable parts on these response cards let students select or create different answers.

Write-on response cards can also be custom-made to provide an organizing structure or background for students' responses. For example, music students might mark notes on a response card that has permanent treble and bass clef scales. Students in a driver's education class could draw where their car should go on response cards that have various traffic patterns and street intersections shown as permanent backgrounds (Hoagland, 1983).

Berg (1994) created an effective type of "write-on" response card for teaching relational concepts (e.g., on, beside, after) to preschool children with developmental delays (see Photo 2). In response to teacher-posed directions or questions (e.g., "Put your fish *next* to the castle"), each child placed a small Velcro-backed marker (e.g., a little yellow fish) on various places within the background scene on his or her felt response card (e.g., a goldfish bowl with a castle and plant inside).

Potential advantages of write-on response cards include:

- Curriculum content and questions for which there are multiple correct answers can be used (e.g., Q: What is an alternative energy source to coal-generated electricity? A: Solar/Nuclear/Geothermal/etc.).
- Students are not limited to predetermined answers and can give creative responses.

- A more demanding recall-type response is required, rather than the simpler recognition-type response used with preprinted response cards.
- Spelling can be incorporated into the lesson.

Possible disadvantages of write-on response cards are:

- Write-on cards have a lower ASR rate compared to preprinted response cards because of the time needed for writing and erasing answers.
- Error rates are likely to be higher than with preprinted response cards.



Photo 3. With write-on response cards, each student in the class can answer every question the teacher asks about the story the students have just read.

- Variations in the size and legibility of students' writing can make their responses difficult for the teacher to see.

Evaluating Response Cards

Response cards have been developed and evaluated through an ongoing series of studies in general and special education classrooms. Several of these studies have compared response cards to hand-raising and one-student-at-a-time recitation, the most commonly used method of student participation during whole-class instruction.

For example, Gardner, Heward, and Grossi (1994) compared write-on cards with hand raising during science lessons in an inner-city, fifth-grade classroom. *Students responded to teacher-posed questions an average of 21.8 times per 30-minute lesson when response cards were used, but made only 1.5 responses per lesson when the teacher called on individual students to answer.* (Look at Figure 1 and think of Student 3 as Anika and Student 4 as Dean.)

The higher participation rate achieved with response cards takes on additional significance when its cumulative effect over the course of a 180-day school year is calculated. Based on the results of this study, *if response cards were used instead of hand raising for just 30 minutes per day, each student would make more than 3,700 additional academic responses during the school year.*