

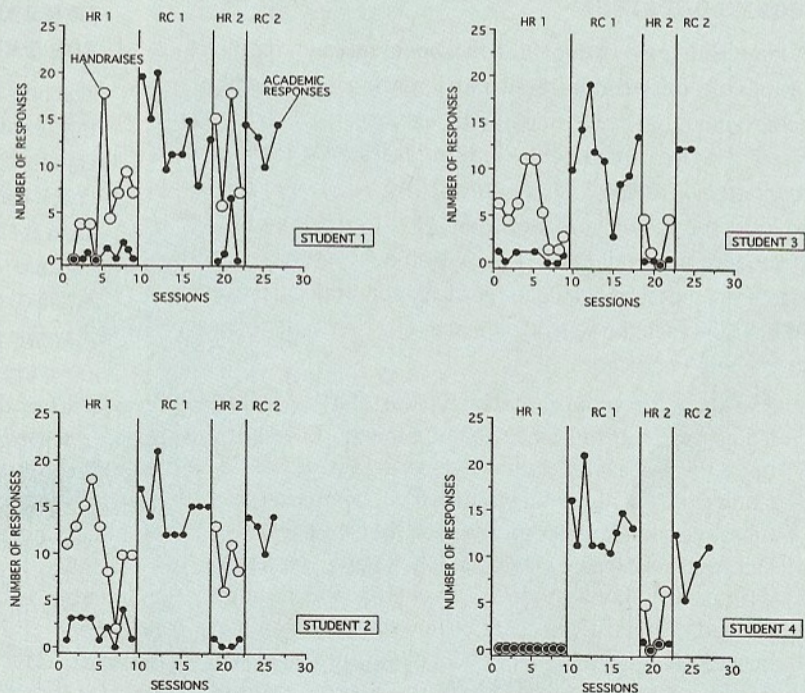
All 22 students in the class scored higher on next-day quizzes and on 2-week review tests following lessons taught with response cards than they did on quizzes and tests covering lessons where students raised their hands to respond. In addition, most of the students preferred response cards and said they were "fun" to use and helped them learn more. This pattern of results—*much higher ASR rates, improved test scores, and student preference for response cards*—has been replicated in several other studies in elementary, middle, and secondary classrooms (see Heward [1994] for a review).

### Suggestions for Using Response Cards in the Classroom

You can adapt and incorporate response-card activities in many ways to best meet your instructional objectives and fit your students' current levels of performance. For example, students might use write-on response cards to display their answers as the teacher demonstrates how to solve a new type of math or geometry problem. During a language arts lesson, students might select and hold up preprinted response cards showing parts of speech (e.g., noun, verb, preposition) as their teacher points to various words in a projected sentence. When the students consistently recognize parts of speech, their teacher can switch to write-on response cards, elevating the lesson to a higher level of knowledge that requires students to recall each part of speech. Response cards might be used during the last 5 minutes of the period in a high school science class to review the day's lesson (Cavanaugh, Heward, & Donelson, 1995).

*Response cards are likely to be more effective when used to give students many active responses within a short period of time (e.g., 5 to 10 minutes) than if used for single responses sporadically during the class period.* You can combine the use of response cards with other high-ASR strategies to create a learning environment in which students actively participate and receive feedback for those responses throughout the school day or class period. For example, a science teacher at the secondary level might incorporate choral responding, guided

**FIGURE 1.** Comparison of Four Students' Responses with and Without Response Cards



*Note:* The four graphs show the number of academic responses to teacher-proposed questions and hand raises by four academically at-risk fifth-grade students during whole-class science lessons in which students participated by hand raising (HR) or response cards (RC).

*Source:* From "Effects of Response Cards on Student Participation and Academic Achievement: A Systematic Replication with Inner-city Students During Whole-class Science Instruction" by R. Gardner, III, W. L. Heward, & T. A. Grossi. *Journal of Applied Behavior Analysis*, 1994, Vol. 27, p. 67. Reprinted by permission.

notes, hands-on laboratory activities, response cards, and time trials within a 50-minute class period like this:

(1) the lesson begins with 3 to 5 minutes' of choral responding in which students "warm-up" for the day's lesson by reviewing concepts they have been learning; (2) students then complete guided notes during a 15-minute lecture or demonstration by the teacher; (3) for the next 20 minutes, small groups of students perform hands-on laboratory experiments, perhaps filling-in a structured worksheet with key procedural steps, results, and observations; and (4) on some days response cards are used during the last 5 minutes of the period to review the day's lesson, whereas on other

days the period ends with two 1-minute time trials as a maintenance and fluency-building activity for concepts learned in previous lessons. The actual time spent with each activity would, of course, vary from day to day, and 5 minutes are left unscheduled to allow for transition time. (Heward, 1994, p. 312)

### General Suggestions for Using Response Cards

Based on anecdotal observations and the empirical results of the classroom evaluations of response cards conducted to date, we can offer the following suggestions:

- Model several question-and-answer trials, giving students practice on how to use the response cards.