



EVIDENCE BASED INTERVENTION NETWORK EBI BRIEF

Response Cards¹

The use of response cards is a teaching method that increases classroom opportunities for all students to respond to academic questions. Rather than posing a question to the class, looking for a student with a hand raised, and calling on one student, the teacher can ask every child in his or her classroom to hold up a card (or paper, whiteboard, chalkboard, etc.) with the answer. This procedure also allows for frequent corrective feedback for all students who participate (Lambert, Cartledge, Heward, & Lo, 2006).

Theoretical support

Basic behavioral principles underlie the effectiveness of response cards, and this intervention is an excellent example of an empirically-validated, behaviorally-based instructional technique rarely taught in teacher education programs, including at the master's-level (Bergens & Martens, 2006). In behavioral terminology, the process of learning can be defined as “a relatively permanent change in behavior or behavior potential brought about by experience” (Skinner, 2008, p. 309) In an educational context, the desired outcome for students is an appropriate rate of accurate responding when presented with a stimulus, such as a printed sentence or a math problem. Behaviorally-based education research often conceptualizes learning experiences or “trials” as stimulus-response-consequence contingencies (Skinner, Fletcher, & Henington, 1996). For example, a teacher asks students to write a word that rhymes with “cat,” the students hold up a whiteboard with their responses, and the teacher reinforces correct responses with praise.

As Skinner et al. (1996) argue, characterizing learning problems as an inability to learn is problematic. The real problem is almost always with suboptimal *learning rates*—the student is not learning as quickly as desired. Intuitively, increasing the number of learning trials (opportunities to learn) increases learning rate, and behavioral research has long supported that assumption (Skinner, 2008). The more times a student responds to a stimulus and receives reinforcement for correct responses, the more likely the student will give the correct response in the future. Skinner et al. (1996) frame many educational strategies in these terms, such as lengthening the school day and decreasing disruptive behavior. These methods allow teachers more time to present students with learning trials. Response cards are simply another technique to increase the number of learning trials. When every student is asked to answer a question, each child has the opportunity to respond and then receive reinforcement or corrective feedback.

Empirical support

Lambert, Cartledge, & Heward (2006). The authors utilized an ABAB reversal design (an applied behavior analysis method that aims to firmly establish causal relations between variables by withdrawing intervention twice) to evaluate the effectiveness of response cards on academic responding and disruptive behavior in two urban 4th-grade classrooms during math instruction. The teachers provided students with small whiteboards to write their answers. While all the children in the classrooms received the intervention, the authors targeted nine students for data collection. The

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teachers selected these students for data collection due to inattentiveness, disruptive behavior problems, and low math achievement. Impressive reductions in disruptive behavior were obtained. The average number of disruptive behaviors per observational period decreased from 5.5 during single-student responding (hand-raising) to 1.3 with response cards. In addition, all students had a great number of opportunities to respond to academic questions. Lambert et al. (2006) assessed social validity as well, finding high levels of satisfaction for the intervention among teachers and students. The study is a good example of how response cards concurrently decrease disruptive behavior and increase academic responding.

Christle & Schuster (2003). While many studies of response cards have shown positive effects on isolated measures of academic engagement and achievement, Christle & Schuster (2003) investigated response cards' effects on several variables simultaneously: opportunities to respond, response rates, achievement, and on-task behavior. Data were collected on five 4th-graders during math instruction, and the effects of hand-raising compared to response cards were measured using a simple ABA reversal design. Results indicated positive effects for all four dependent variables and consistent return to baseline levels when the intervention was withdrawn.

Cavanaugh, Heward, & Donelson (1996). Cavanaugh et al. (1996) explored the use of response cards in a high school science class and measured accuracy rates on classroom tests. The teacher taught review items using either response cards or a traditional passive presentation method. Twenty-one of the 23 students in the class achieved higher test scores on items reviewed using response cards, including all eight students with disabilities. The authors discuss the stimulus-response-consequence principle and also note that the science teacher reported satisfaction with the intervention because the response cards gave him immediate visual feedback concerning how well all of his students understood the presented concepts.

References

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