



Extending Learning Across Time & Space: The Power of Generalization

Teachers have every right to celebrate when they finally succeed in teaching struggling students to use academic or behavioral strategies in their classrooms. Despite this encouraging start, though, teachers often still face an important challenge with their interventions. A frequent stumbling block to an effective intervention outcome is that the student fails to transfer academic or behavioral strategies to other settings or situations where those strategies would be most useful. That is, students may not *generalize* their positive behavior changes, which can greatly reduce the overall positive impact of classroom interventions.

To appreciate the importance of generalization, consider these examples:

- Sarah, a 4th grade student, has a one-year reading delay and needs lots of practice in reading to increase her rate of decoding. However, she never picks up a book outside of school.
- Jack, an 8th-grader, gets into fights frequently and has poor relationships with peers. He participates in a social-skills group. When interacting with other students under the watchful eye of the school counselor, Jack shows that he is able both to identify when he becomes angry and employ several strategies to calm himself down. In unstructured settings such as the lunchroom or hallway, though, Jack continues to get into arguments and shoving matches with other students.
- Thomas has learned terrific study skills in his 7th-grade social studies class. His class notes were once a shambles—but now are neatly written and thorough. In science class, however, Thomas' notes continue to be messy and incomplete, and his science test grades suffer as a result.

While the student scenarios presented here vary, they share a single characteristic: The student has failed to transfer, or generalize, learned behaviors to new settings or situations.

When developing school-based interventions, most educators simply 'treat and hope' (Rutherford & Nelson, 1988). That is, they put together research-based strategies to improve student behaviors or academic performance—and then *hope* that the student will generalize the successful strategies rather than explicitly train the student to apply these new, more adaptive strategies to other situations in which they would be useful.

There are several explanations for why a student may fail to generalize a skill to a new setting or situation.

- One barrier to generalization is that the student may not be able to identify relevant cues in the new setting that would trigger that student's use of the target skill. For example, our 4th-grade

student Sarah is not likely to read at home if there are few books available there to remind her that she can choose to read as a leisure activity.

- A second barrier to generalization may be that the student is not reinforced for using a target skill in the new setting or situation. Thomas, the 7th-grader, takes polished notes in social studies because the teacher praises and encourages him for his effort—but he does not put effort into writing his science notes because the science teacher pays little attention to note-taking
- As yet another generalization barrier, a student's newly learned behaviors may be suppressed in specific setting because the student's *inappropriate* behaviors continue to be unintentionally rewarded, or reinforced, in that setting. So Jack, the 8th-grade student, shows appropriate social skills in a group but does not transfer those same skills to the hallway or lunchroom because he is powerfully reinforced with plenty of peer attention when he gets into arguments and shoving matches with other students. Jack is unlikely to try out new, socially appropriate ways of interacting with peers in natural settings until his reinforcement for engaging in the new behaviors outweighs the payoff he receives for the old, maladaptive behavior.

The following are some ideas that teachers can try when programming for generalization (McConnell, 1987; Rutherford & Nelson, 1988; Stokes & Baer 1977; Stokes & Osnes, 1988). While there are many more strategies for promoting generalization than are contained in this handout, the tips outlined here do address challenges that teachers commonly face in getting students to transfer skills to the settings or situations in which they are most needed.

The student has learned a skill or strategy well in one setting. The goal now is to have the student transfer that skill or strategy to other appropriate settings. ('Generalization to other settings')

- *Prepare Strategy Sheets.* Once the student has mastered a skill or strategy in one setting, assist the student in creating a 'strategy sheet' that captures in checklist format the key steps that make up the strategy. Starting in the setting in which the student already successfully uses the strategy, train the student to use the checklist as an independent self-check to verify that he or she is implementing the strategy correctly. (If the targeted strategy is 'note-taking', for example, a strategy checklist might include items such as 'Brought paper and writing materials to class', 'Sat near the teacher', 'Wrote down all key points', 'Highlighted unfamiliar vocabulary', etc.) Once the student has demonstrated reliably that he or she can use the checklist correctly, meet with the student and identify other settings where the student would benefit from using the strategy. Make a list of those settings. Establish the goal for the student that he or she will use the strategy in the new settings whenever appropriate. Have the student log the times when he or she actually uses the strategy in those new settings. Reward (and praise) the student for instances in which the student successfully employs the skill or strategy under the appropriate circumstances in the new setting.
- *Encourage Other Teachers to 'Coach' the Strategy.* Talk with other educators in your school who work with your student. Describe for them the skill or strategy that your student is able to use reliably in your classroom and that you would like to see generalized to other settings.

Encourage these educators to prompt the student to use the strategy when appropriate in their classrooms. Request that your colleagues keep you informed—and be sure to reward and praise the student whenever teachers outside of your room report that the student has successfully used the strategy!

- *Identify the 'Look-Fors' That Trigger Use of the Strategy.* 'Help your student to identify key characteristics--or 'look-fors'--of settings in which he or she should use the selected skill or strategy. A student attempting to generalize note-taking skills, for example, may identify 'The teacher lectures to the whole class' as a signal that he should use his note-taking skills. Another student may have learned to take a short discretionary time-out whenever she becomes overly upset with difficult classwork. This student might define 'I try to do schoolwork and I feel a knot in my stomach' as a physical indicator that she should use the time-out strategy, no matter what class she is attending. As an additional support for generalization, inform other educators about the particular strategy the student needs to use in other settings and the key indicators the student has identified that should trigger his or her use of the strategy. If these staff members notice that the student has overlooked an opportunity to employ the strategy in their classrooms, they can approach and prompt that student to use the strategy.
- *Use a Skill Diary.* For *academic* skills or strategies, ask the student to keep a skill diary in which the student records those situations or settings when he or she has successfully used the strategy. Meet with the student periodically to review entries and reinforce the student's efforts. When conferencing with the student, ask to see examples of those student work products that were created using the skill (e.g., copies of class notes, essays, completed math problems)—both to verify that the student actually used the target strategy as claimed and to check that the strategy is indeed helping the student to improve performance.
- *Standardize Routines Across Classrooms.* Collaborate with other teachers with whom you share students to develop a single, standardized set of general behavior and academic management techniques across all of your classrooms. Students often discover that teacher expectations vary dramatically depending on the classroom they happened to be sitting in. In fact, when faced with differing expectations across classrooms, students are likely to view each room as a separate kingdom governed by its own set of unfathomable rules. We should not be surprised, then, if students who move among highly variable classroom environments fail to generalize skills learned in one of these settings to others. In contrast, when a student encounters uniform academic routines and behavioral expectations in each classroom, that student is more likely independently to generalize adaptive academic and behavioral skills and strategies from one setting to all settings.

The student has responded well to an intervention that includes reinforcement for appropriate behaviors. Now the teacher wants to fade the reinforcement or make the program easier to manage while maintaining the positive behavioral effects. ('Generalization to other reinforcers')

- *Wean the Student From Rewards to Privileges.* Create a set of privileges that you believe the student is likely to find motivating. Sample privileges might be: 'The student is allowed to walk

independently through hallways without adult supervision.' 'The student may be selected by the teacher to run errands' etc. When the student displays a stable period (e.g., several weeks) of behavior improvement under the individualized reinforcement program, meet with the student to praise the improvement. Let the student know that you plan to discontinue the reward program because the student has shown that he or she can now be trusted to transition to higher-level privileges. Review those privileges with the student. Let the student know that he or she can continue to access the classroom privileges so long as the student continues to show good behaviors.

- *Pair Rewards With Naturally Occurring Classroom Reinforcement.* Identify opportunities that naturally occur in your classroom to positively reinforce the student. Examples include teacher or peer praise, social interactions, exposure to interesting learning opportunities, and improved grades. As the student earns rewards under his or her individualized reinforcement program, pair those 'artificial' rewards with natural reinforcers that also appear to motivate the student.

For example, a teacher finds that a behaviorally challenging boy in her class responds very well to praise—but only when that praise is delivered in a private conversation rather than publicly. So whenever the teacher pulls the student aside to give him an earned reward, she uses that opportunity to quietly praise his effort. Eventually, the teacher lets the student know that his behavior has improved to the point where the reward program can be discontinued. However, she continues to meet with him for brief, private 'pep talks', during which she continues to praise his sustained behavioral gains. In this example, praise—a reinforcer naturally available in the classroom—is now maintaining the student's behavioral improvements, having replaced the more artificial set of rewards previously needed to shape the student's behavior.

- *Transition from Individual to Classwide Rewards.* Create a menu of classwide incentives for appropriate behavior that can be accessed by any student. (For example, any student in the class who displays good behaviors through an entire day may be allowed to spend the last 10 minutes of class in a supervised activity at the gym.)

Your eventual goal is to replace a target student's individualized rewards with the class menu of rewards. Once a target student is able to bring his or her behaviors into line through the use of individualized incentives, the student can be weaned off those individual rewards and instead join peers in selecting earned reinforcers from the classwide reward menu. This approach has two advantages: First, a classwide reward system is often highly motivating and may well bring about substantial improvements in the entire group's behaviors. Second, the target student becomes more fully integrated with 'typical' peers when he or she is able to share in their rewards.

- *Give the Student Responsibility for Monitoring Behaviors and Earned Rewards.* As the target student demonstrates behavioral success, train that student to monitor his or her own behaviors (e.g., using a daily self-monitoring chart). Inform the student that he or she is responsible for (1) tracking those self-ratings, (2) noting when a reinforcer has been earned, and (3) approaching the teacher to receive a reward. Of course, the teacher should

occasionally 'spot-check' the student's self-ratings to ensure that the student is accurately rating his or her behaviors.

Changes in the classroom environment are required to fully support the student's behavior changes. ('Modifying the setting to support target behavior')

- *Teach the Student to Recruit Reinforcement.* Train the target student to seek reinforcement from others in appropriate ways that support his or her behavioral targets. For example, a student whose attention often wanders during independent seatwork may be trained to politely and quietly ask a peer for help in understanding directions or finding his place in a group assignment. Or a student who often fails to complete classwork but finds teacher attention to be very motivating may be taught to 'recruit' teacher praise by reliably turning in completed assignments that demonstrate her best effort.
- *Train Peers to Be Helpers.* Teach classmates routines for providing friendly assistance to one another. Training peers as helpers can foster a positive learning environment, one in which your target student is more likely to be reinforced for taking risks and trying out new, positive behaviors.

For example, you might train students to assist peers who lose their place in assignments, politely redirect neighboring students whenever they engage in distracting off-task behaviors during learning activities, or check in with 'peer buddies' at the end of the day to make sure that they have written down their homework assignments correctly and have the necessary materials to complete their homework.. Reward these peer helping behaviors with praise. Also consider the option of assigning 'prize-points' to student helpers that can be redeemed for rewards or privileges.

- *Institute a Classwide Reward System.* Put a classwide reward system in place to suppress group negative behaviors that can disrupt the learning environment and undermine a target student's attempts to try out new, appropriate behaviors in the class setting. A teacher might set up a simple group reward program, for example, in which the entire class is awarded 20 'good behavior' points for each morning and 20 points for each afternoon in which they show consistently positive behavior. The class is promised a pizza party when they have accumulated 1200 points. However, the group will fail to earn points in a given morning or afternoon if they persist in negative behaviors after two teacher warnings. Negative behaviors might include talking during teacher-directed lessons, laughing at another student's misbehavior, or engaging in teasing or putdowns. A group behavior plan can help to improve the learning environment and also prevent a target student from being picked on by peers or being encouraged to misbehave.

Other generalization challenges:

- *Diversify Student Responses.* Your student may have successfully learned a very narrowly focused behavior but not yet learned how to generalize that behavior to a larger 'response-class' (group of functionally equivalent behaviors). For example, a teacher may have a child with cognitive delays who has learned to greet people by saying "hi" but has not yet learned to

generalize his response by accessing a larger pool of possible greetings (e.g., "Good morning", "Hello", "How are you?"). In this situation, that instructor might first explicitly teach the student a range of acceptable variations on the learned behavior, next reinforce the student for appropriate use of varied examples from the larger response class in a controlled setting, and finally reinforce the student for using generalized behaviors in real-world settings.

You may also want to teach the student to distinguish between examples and non-examples of a response class so that the student can eventually judge independently whether a particular behavior is appropriate for use within the context of a specific setting or situation. To return to our example, the teacher might train the student to hear a word or phrase and be able to indicate whether it is or is not typically used as a social greeting.

- *Help the Student to Retain Skills Over Time.* Your student appears to have mastered a strategy or skill during one class session but seems to have forgotten that skill by the next class session ('generalization across time').

Here are some ideas to try:

Create a checklist for the student that contains the essential steps of the skill or strategy. Have the student adopt a routine of previewing the steps of the checklist just prior to the class or activity in which the student will need to use the strategy. (An eventual goal may be to have the student *memorize* the key steps of the strategy—perhaps by condensing those steps into an acronym or other memory technique.)

A group instructional strategy that strengthens skill retention is for the teacher to open a class lesson with a brief review of a previously taught skill or concept. Kicking off the lesson with a quick review of previous content will prime your target student with the essential steps of the strategy precisely when he or she will need the information to apply to the current lesson. And your whole class will be more likely to retain past instructional material through this review.

If your student has difficulty in recalling a strategy, don't be too quick to jump in with the answer. Instead, consider using 'partial prompts'. Partial prompts give your student hints about how to proceed in his or her problem solving without simply supplying the answer: They are instructional questions or directives that offer the student just enough information to recall the next step in the strategy or skill. Then the student is encouraged to continue with the assignment independently if possible. If a student is stuck on a long-division math computation problem, for instance, the teacher may say, "Point to the number that you will be dividing....Now point to the number that you will divide by...Tell me what the next step is that you will follow." Partial prompts require students to remain *active participants* in academic work, rather than allowing them to assume a posture of learned helplessness.

And, finally, don't overlook this simple tip: Ask the struggling student to 'think aloud' by stating what he or she remembers of the skill or strategy that should be used. You may be surprised to discover that the student is able to accurately recall most of the strategy and needs only minor teacher assistance to solve the problem or complete the assignment.

References

McConnell, S. R. (1987). Entrapment effects and the generalization and maintenance of social skills training for elementary school students with behavior disorders. *Behavioral Disorders, 12*, 252-263.

Rutherford, R.B., & Nelson, C.M.. (1988). Generalization and maintenance of treatment effects. In J.C.Witt, S.N.Elliott, & F.M.Gresham (Eds.) *Handbook of behavior therapy in education* (pp. 277-324). New York: Plenum Press.

Stokes, T.F., & Baer, D.M. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis, 10*, 349-367.

Stokes, T.F., & Osnes, P.G. (1988). The developing applied technology of generalization and maintenance. In R. Horner, G. Dunlap, & R.L. Koegel (Eds.), *Generalization and maintenance: Life-style changes in applied settings* (pp. 5- 20). Baltimore: Brookes.