What is Differential Reinforcement?

Differential Reinforcement involves giving or withholding reinforcement based on the desirability or appropriateness of the behavior. In other words, when a student engages in a desirable behavior, reinforcement is provided; when a student engages in an undesirable behavior, reinforcement is withheld. When implemented correctly and consistently, differential reinforcement is a research-based strategy to increase appropriate behaviors and reduce or eliminate inappropriate behaviors. There are several types of differential reinforcement; however, they all share the same principles of reinforcing desired behavior and withholding reinforcement for undesired behavior.

Type	Definition	Example	When to Use
Differential Reinforcement of **Other Behaviors** (DRO)	**DRO** involves reinforcing the absence of a target behavior. The teacher provides reinforcement for any positive behavior other than the one she is trying to eliminate.	To eliminate inappropriate talking, the teacher may praise a student (who typically talks frequently during seat work) for every 5 minutes that pass without the student talking to a peer.	This method is useful for behaviors the teacher would like to **eliminate** completely.
Differential Reinforcement of **Low Rates** of Behavior (DRL)	**DRL** involves reinforcing the reduction of a target behavior. The teacher provides reinforcement when the student engages in the target behavior less often.	To reduce requests to leave the classroom, the teacher may reward a student (who typically requests to leave for the bathroom multiple times a period) for only asking once a period.	This method is useful for **reducing** positive behaviors that occur too frequently.
Differential Reinforcement of **Incompatible** Behavior (DRI)	**DRI** involves providing reinforcement when the student engages in a behavior that cannot occur at the same time as the problem behavior. Thus, this method replaces the problem behavior with a desirable or wanted behavior.	To replace out of seat behavior, the teacher may reward a student (who usually is out of her seat) every time this student sits at her desk for a designated period of time.	This method is useful when an incompatible desirable behavior can be used to **replace** the unwanted behavior.

How to Use Differential Reinforcement

Differential Reinforcement of Other Behaviors (DRO)

1. Pick one target behavior and define it using precise language. For example, talking to peers could be defined as speaking and gesturing to another student.
2. Choose a time interval to check for the target behavior. Behaviors that occur often should be assigned shorter intervals than behaviors that occur less often. For example, talking to peers might be assigned a 5-minute interval, while out-of-seat could be assigned a 10-minute interval. Use a timer to help keep track of your intervals.
3. At the end of each interval, check whether the student is engaging in the target behavior. If not, provide reinforcement such as praise or a sticker.
4. As the target behavior decreases over time, increase your interval (e.g., from 5 minutes to 10 minutes).

Differential Reinforcement of Low Rates of Behavior (DRL)

1. Choose a behavior you would like a student to engage in less often and define it using precise language.
2. Collect data to determine how often the behavior is occurring. This can be done using tally marks.
3. Determine how often you would like the behavior to occur (i.e., the desired rate).
4. Choose an attainable first goal for the student. For example, if a student usually asks to sharpen her pencil 20 times during the morning period, you might set an initial goal of 15 times.
5. Communicate this goal with the student, and reinforce the student when they meet the goal. As the target behavior decreases, continue to lower the goal, reinforcing the student each time she meets the new criteria.

Differential Reinforcement of Incompatible Behavior (DRI)

1. Pick a target behavior that occurs fairly often, and define it using precise language.
2. Consider desirable behaviors that the student cannot perform at the same time as the target behavior (e.g., insults/compliments, out of seat/in seat).
3. Provide reinforcement every time the student engages in the replacement behavior.

Tips for Effective Differential Reinforcement

- Carefully observe and consider what your student finds reinforcing. Students are sometimes reinforced by actions which appear punishing, such as reprimands. Thus, if a student is motivated by attention, it is important only to provide attention for positive behaviors, while withholding attention for negative behaviors. Remember, when students receive reinforcement for positive and negative behaviors, they are likely to continue engaging in both.
- Choose powerful reinforces. If possible, identify the reinforcer the student is trying to access with the problem behavior (e.g., attention, escape/avoidance, obtaining an object/activity), and allow the student to access it through the desirable behavior instead. Otherwise, select a reinforcer that the student highly-prefers and that can be delivered frequently.
- Have realistic expectations (set obtainable criteria). For differential reinforcement to work, the reinforcement should initially be easy to obtain and occur frequently, allowing the student to experience success and creating momentum for good behaviors.
- If a student is only meeting the criteria to receive reinforcement infrequently, adjust the criteria (e.g., reduce intervals, temporarily increase the number of times the student can engage in the target behavior and still receive reinforcement).

Evaluate Your Differential Reinforcement!

- Collecting data is an excellent way to evaluate the effectiveness of your differential reinforcement. Before implementing differential reinforcement, collect baseline data by recording the number of times the student is engaging in the target behavior (the behavior you want to reduce or eliminate). You can use tally marks or counters to record behavior as you go, or review recordings of your instruction to evaluate the target behavior. After implementing differential reinforcement, continue to monitor the rate of the target behavior to evaluate effectiveness (reduction of the target behavior). Adjust your criteria accordingly.
- Ask others (peers or instructional leaders/coaches) to observe you and provide feedback on your use of differential reinforcement. Ask them to record how many times you deliver and withhold reinforcement for desirable and target behaviors. Ask them to look carefully for instances where you accidentally provide reinforcement for target (undesirable) behaviors.

Resources

This guide was adapted from the following online resources:

Chazin, K.T. & Ledford, J.R. (2016). Differential reinforcement. In Evidence-based instructional practices for young children with autism and other disabilities. http://vkc.mc.vanderbilt.edu/ebip/differential-reinforcement

The IRIS Center for Training Enhancements: Addressing disruptive and noncompliant behaviors (Part 2): Behavioral Interventions. https://iris.peabody.vanderbilt.edu/module/bi2/#content

Additional Online Resources

The IRIS Center for Training Enhancements. (2012). Classroom management (Part 1): Learning the components of a comprehensive behavior management plan. http://iris.peabody.vanderbilt.edu/beh1/chalcycle.htm

The IRIS Center for Training Enhancements. (2012). Classroom management (Part 2): Developing your own comprehensive behavior management plan. http://iris.peabody.vanderbilt .edu/beh2/chalcycle.htm

The IRIS Center for Training Enhancements: Addressing disruptive and noncompliant behaviors (Part 1): Behavioral interventions. http://iris.peabody.vanderbilt.edu/bi2/chalcycle.htm

Select Research and Resources

Cammilleri, A.P., Tiger, J.H., & Hanley, G.P. (2008). Developing stimulus control of young children's request to teachers: Classwide applications of multiple schedules. *Journal of Applied Behavior Analysis, 41*(2), 299-303.

Hanley, G.P. & Tiger, J.H. (2011). Differential reinforcement procedures. In Fisher, W.W., Piazza, C.C., & Roane, H.S. (Eds.), *Handbook of Applied Behavior Analysis* (229-249). New York, NY: The Guilford Press.

Newman, B., Tuntigian, L., Ryan, C.S., & Reincecke, D.R. (1997). Self-managment of a DRO procedure by three students with autism. *Behavioral Interventions, 12*(3), 149-156.

For Further Reading

Epstein, M., Atkins, M., Cullinan, D., Kutash, K. & Weaver, R. (2008). Reducing Behavior Problems in the Elementary School Classroom: A Practice Guide (NCEE #2008-012). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. http://ies.ed.gov/ncee/wwc/publications/practiceguides