

Module: Reinforcement

Steps for Implementation: Token Economy Programs

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Step 1. Identifying the Target Skill/Behavior

In Step 1, teachers/practitioners identify a target skill/behavior for a learner with ASD that they would like to increase.

1. Teachers/practitioners define the target skill/behavior in observable and measurable terms.

The following are examples of target skills/behaviors that could be addressed using token economy programs.

Example: Sarah will raise her hand during English class to request/answer a question four out of five times for at least three days.

Describing the in measurable and observable terms allows teachers and other practitioners to collect accurate and reliable baseline data, distribute tokens when the learner uses the target skill/behavior correctly, and ensures that all staff members know what the target skill/behavior looks like so that tokens can be provided consistently across classes and activities. Furthermore, a clearly described target skill/behavior helps learners understand exactly what behavior is expected of them in certain settings and situations.

Step 2. Collecting Baseline Data

Once the target skill/behavior is identified, teachers/practitioners collect baseline data to determine how often the learner with ASD is currently using the target skill/behavior.

1. Teachers/practitioners measure a learner's use of the target skill/behavior before implementing a token economy program by collecting one of the following:
 - a. *frequency data*. Frequency data document how often a learner engages in a particular behavior. Two methods are used to collect frequency data: time sampling and event sampling. With *time sampling*, data on a particular behavior are collected after a certain amount of time (e.g., every 5 minutes). If a learner is engaging in the behavior at that time, then teachers/practitioners record this on the data sheet. This sampling technique is best used to monitor high frequency behaviors such as drooling and staying seated during class. *Event sampling* is used to record every instance of the behavior and typically focuses on low frequency behaviors such as taking a bite of food, hitting, and using the toilet. Both sampling techniques are used

Module: Reinforcement

to evaluate patterns of learners' behavior over a period of days or weeks. Tables 20 and 21 provide examples of both frequency data collection methods.

Table 20. Example of Time Sampling Data Collection Sheet

Date	Time						Total	Before, during, or after reinforcement
	9:00	9:05	9:10	9:15	9:20	9:25		
7/26/08	X		X				2	<i>Before</i>
7/27/08	X	X					2	<i>Before</i>
7/28/08	X	X		X		X	4	<i>Before</i>
7/29/08		X	X	X		X	4	<i>Before</i>

Table 21. Example of Event Sampling Data Collection Sheet

Date	Takes toy from peer	Total	Before, during, or after reinforcement
7/26/08	X	1	<i>Before</i>
7/27/08	X	1	<i>Before</i>
7/28/08	X	1	<i>Before</i>
7/29/08	XXX	3	<i>Before</i>

- b. *duration data*. Duration data are used to record how long a learner engages in a particular behavior. For example, a teacher might collect data on how long a learner with ASD stays in his seat or how long a young child stays engaged in parallel play. Table 22 provides an example of a duration data collection sheet.

Table 22. Example of Duration Data Collection Sheet for Remaining in Seat

Date	Start time	End Time	Total minutes	Setting/activity	Before, during, or after reinforcement
7/26/08	9:00	9:01	1	<i>English</i>	<i>Before</i>
7/27/08	9:05	9:06	1	<i>Math</i>	<i>Before</i>
7/28/08	9:00	9:02	2	<i>Science</i>	<i>Before</i>
7/29/08	9:10	9:12	2	<i>Resource room</i>	<i>Before</i>

Baseline data give teachers/practitioners a starting point from which to evaluate whether the target skill/behavior increases as a result of a token economy program.

- Teachers/practitioners collect baseline data for a minimum of four days before implementing a token economy program.
- Teachers/practitioners collect baseline data in numerous settings and/or activities.

It often is useful to have more than one practitioner collect baseline data over the course of several days to compare findings. Also, by collecting data over the course of several days in multiple settings, teachers/practitioners can potentially recognize patterns of behavior. For example, does the learner use the target skill/behavior more often in one setting than another?

Module: Reinforcement

This kind of information helps teachers/practitioners identify activities or settings where a token economy program can be used to increase the target skill/behavior.

Step 3. Identifying Reinforcers

In Step 3, teachers/practitioners identify reinforcers for learners with ASD. Reinforcers are anything that increases the likelihood that the target skill/behavior will be used in the future. This is important because learning will not take place unless reinforcers are motivating to the learner with ASD. Teachers/practitioners should keep in mind that many of the reinforcers often used with typically developing students may not be motivating to learners with ASD (e.g., social praise, high fives). It is essential that teachers/practitioners identify reinforcers for each learner with ASD that are sufficiently motivating and lead to an increase in the target skill/behavior.

Potential reinforcers that can be used with a token economy program include the following:

- *Activity reinforcers* could include play activities, access to computer games, additional free time, and outings.
- *Tangible/edible reinforcers* include objects that a learner with ASD can acquire. Examples include stickers, toys, magazines, pencils, candy, and popcorn.
- *Sensory reinforcers* often are motivating to learners with ASD. However, these types of reinforcers should be used only when (1) the teacher can control access to them; (2) the reinforcer is deemed acceptable and appropriate for the setting; and (3) no other reinforcer is as motivating to the learner with ASD. Examples include looking at a kaleidoscope, blowing bubbles, playing with a squishy ball, sitting in a rocking chair, or rubbing hand lotion on hands.

The following activities can be used to identify reinforcers for individual learners with ASD.

1. Teachers/practitioners consider the age of the learner with ASD.

It is particularly important to take into account the learner's age when identifying potential reinforcers. For example, it would probably not be appropriate for a sixth grader with ASD to earn a Thomas train when he acquires enough tokens. This kind of reinforcer might best be saved for times when the learner receives services in a resource room with other learners with ASD or disabilities.

2. Teachers/practitioners observe the learner in natural settings and identify activities, objects, and foods that the learner selects when allowed free choice.
3. Teachers/practitioners identify potential reinforcers by asking the learner what he/she would like to work for (if appropriate).

Module: Reinforcement

4. Teachers/practitioners identify potential reinforcers by interviewing parents or other staff to identify reinforcers that have worked in the past.
5. Teachers/practitioners identify potential reinforcers by conducting a reinforcer sampling.

Reinforcer sampling helps teachers/practitioners identify activities and materials that are motivating to the learner and that might be used to teach new skills. This type of procedure usually takes about five minutes and involves the steps listed below.

- Sit in front of the learner and hold up two items and say to the learner, "Pick one."
 - Wait 10 seconds for the learner to indicate his/her choice in whatever manner is appropriate (e.g., reaching, pointing, verbalizing, using a switch or augmentative communication device).
 - Place the selected and non-selected objects in their appropriate containers (i.e., one to hold the learner's selections, one to hold the materials not selected).
 - Continue the first three steps until half the objects presented are chosen (Mason & Egel, 1995).
6. Teachers/practitioners complete a reinforcer checklist to identify potential reinforcers for a learner with ASD.

The reinforce checklist can be used with children and youth with ASD across the age range to identify their least and most desirable reinforcers. Teachers/practitioners simply check "yes" or "no" next to a variety of reinforcers. Results can then be used to create a reinforcer menu. The following table provides an example reinforcer sampling menu that could be used to identify reinforcers for individual learners with ASD.

Module: Reinforcement

Table 23. Sample Reinforcer Menu Sampling

Example: Elementary Reinforcer Menu	
Learner name: _____	
Target skill/behavior: _____	
Instructions: Ask individual learners to place a check (✓) next to at least eight items/activities they would like to earn. Read the list to non-readers and help them mark the items they select.	
_____ 1. Bubbles	_____ 7. New comic book
_____ 2. Ice cream	_____ 8. Spider man pencils
_____ 3. Coloring book	_____ 9. Pizza for lunch
_____ 4. Extra computer time	_____ 10. Stickers
_____ 5. Squishy ball	_____ 11. Playdough
_____ 6. Lollipop	_____ 12. Bookmark with string

Step 4. Creating a Reinforcer Menu

1. Teachers/practitioners create a menu of possible reinforcers listed by name (if the learner with ASD can read) or by picture for an individual learner with ASD.

This task allows teachers/practitioners to organize potential reinforcers in an orderly manner. Potential reinforcers can be organized according to categories such as social reinforcers, activity reinforcers, and sensory reinforcers.

The following tables illustrate two different reinforcer menus that could be used with learners with ASD.

Module: Reinforcement

Table 24. Example of Picture Reinforcer Menu

 <p>NEW COMPUTER GAME</p>	 <p>PLAY BASKETBALL FOR 10 MINUTES</p>
 <p>SIT IN ROCKING CHAIR FOR 10 MINUTES</p>	 <p>NEW TRAIN</p>

Table 25. Example of Written Reinforcer Menu

<p>If I earn 10 tokens, I would like:</p>
<p>Circle choice for this class</p>
<ul style="list-style-type: none"> • Ten minutes of extra play time on the computer
<ul style="list-style-type: none"> • Extra recess time
<ul style="list-style-type: none"> • New comic book
<ul style="list-style-type: none"> • Jar of bubbles
<ul style="list-style-type: none"> • Erase the chalkboard

Adapted from Aspy and Grossman (2007)

Step 5. Establishing a Token Economy Program

In Step 5, teachers/practitioners identify the medium of exchange. That is, they determine what will serve as tokens for the program.

1. Teachers/practitioners identify tokens that are:
 - a. attractive,
 - b. easy to carry, and
 - c. easy to dispense.

Virtually anything that is visible and countable can be used as a token in this type of reinforcement program. Examples include poker chips, stickers, tally marks, pennies, marbles in a jar, pictures of the target skill/behavior on a Velcro board, and play money.

Module: Reinforcement

2. The identified token is age and developmentally appropriate for the learner with ASD.

It is particularly important to take into account the learner's age and developmental level when identifying tokens. For example, it might be more appropriate to use a checklist or play money with a higher functioning learner with ASD. On the other hand, a teacher might use a chart where learners place pictures of the target skill/behavior on Velcro pieces each time he uses the target skill/behavior with learners who do not yet understand the concept of money.

3. Teachers/practitioners set up a system for exchanging tokens that includes:
 - a. "a bank" to keep track of tokens earned and spent,
 - b. a time and place for purchasing reinforcers from the reinforcer menu, and
 - c. the monetary value of each item on the reinforcer menu.

It is often useful to create a "store" in an area of the classroom that contains the "bank," the reinforcer menu, and the desired items. For example, a teacher could set up an area in the back corner of the classroom where a poster-sized reinforcer menu is hanging on the wall and displays the "business hours" (e.g., when tokens can be exchanged for an item on the reinforcer menu). A teacher might decide that learners can exchange tokens daily, weekly, or as soon as the designated number of tokens has been acquired. Again, this should be based upon a learner's age and developmental level. It is often beneficial to provide learners with frequent opportunities to purchase reinforcers at the beginning of the program to establish a clear understanding of how a token economy program works and to maintain motivation.

A small table in this area also may display the desired items and/or pictures of potential outings that the learner with ASD wants to work for. The teacher might also include the "price" next to each item on the reinforcer menu. The token value of each reinforcer should be based upon its monetary value or demand. For example, if the reinforcer is expensive (e.g., new computer game) or highly attractive (e.g., trip to pizza shop), the token value should be higher. When first setting up the program, it is important to balance the learner's demand for the item with his/her ability to acquire the skill quickly and efficiently. For instance, it would be wise to initially include a number of items on the reinforcer menu that can be easily acquired based upon the learner's current skills. As learners gain mastery of the target skill/behavior, more expensive and highly attractive items that might take some time to acquire can be added to the reinforcer menu.

Step 6. Implementing a Token Economy Program

1. Teachers/practitioners clearly describe to learners with ASD:
 - a. the target skill/behavior,
 - b. how the token economy program works, and
 - c. how many tokens are required before receiving an item from the reinforcer menu.

Teachers/practitioners clearly describe the behavior to learners with ASD in simple terms so that they know what is expected of them. Learners also must be told when and where the token

Module: Reinforcement

economy program will be in effect. For instance, will it be used only in English class and the resource room? Or will it be used in all settings across the day (for learners who receive services in inclusive programs)?

2. Teachers/practitioners display the rules for earning and exchanging tokens.

This posting should include a clear description of the target skill/behavior, rules for appropriate behavior, and how tokens can be earned. Table 26 offers an example of a rules poster.

Table 26. Example of Rules Poster

<p>I will stay in my seat for 5 minutes without talking during English class.</p>
<p>Classroom Rules</p> <ol style="list-style-type: none">1. I will stay seated in my chair during English class.2. I will not talk while the teacher is talking.3. When the timer rings, I will get a chip.

It also might be necessary to engage in a role play with learners with ASD so that they more fully understand what is expected of them by going over the rules and acting out the sequence of engaging in the target skill/behavior, getting a token, and choosing an item from the reinforcer menu.

3. When first starting the token economy program, teachers/practitioners immediately provide a token to the learner with ASD each time the target skill/behavior is displayed.

Initially, teachers/practitioners use a continuous schedule of reinforcement in which each and every instance of the target skill/behavior is immediately rewarded with a token. This helps the learner with ASD establish a relationship between using the target skill/behavior and receiving a token.

4. Teachers/practitioners describe the target skill/behavior after the learner uses it correctly.

Example: A teacher might say, “You stayed in your seat for five minutes. Now you can get a token.”

5. Teachers/practitioners pair giving the token to the learner with ASD with social reinforcement (e.g., praise, teacher attention).

Because many learners with ASD have not yet learned the value of social reinforcers, teachers/practitioners must teach them to like these types of reinforcers by initially pairing a

Module: Reinforcement

social reinforcer with the token. As learners with ASD become more motivated by social reinforcers, teachers/practitioners fade the use of the tokens.

6. Teachers/practitioners allow the learner with ASD to select a desired object, activity, or food from the reinforcer menu when the designated number of tokens has been acquired.

Learners also can be given a “my choice” option on the reinforcer menu in which they are able to engage in desired activities after using the target skill/behavior. This is particularly useful in instances in which learners often select a reinforcer before the activity, but change their minds after the activity is complete. Including this option on the reinforcer menu may combat potential problems that might arise in these situations.

7. Teachers/practitioners make adjustments to a learner’s reinforcer menu to maintain motivation.

To maintain a learner’s interest and motivation, teachers/practitioners periodically adjust prices and rotate items on the reinforcer menu to reflect a learner’s acquisition of the target skill/behavior as well as demand for a particular item. For example, a learner might become less motivated by a lower priced item because he is able to gain access to it easily as he becomes more proficient at using the target skill/behavior. Therefore, a teacher might include some additional lower priced items or increase the price of all of the items so that the learner stays motivated to acquire some of the higher priced items.

8. Teachers/practitioners reward the target skill/behavior consistently across settings.

The success of the token economy program is dependent upon a number of factors including teacher/practitioner implementation. It is essential that all teachers/practitioners who have frequent contact with the learner with ASD be familiar with the token economy program and how to implement it in a variety of settings. This will ensure that learners are being reinforced appropriately and thus acquiring the target skill/behavior.

9. Teachers/practitioners fade the use of tokens as the learner starts using the target skill/behavior independently.

As learners with ASD begin to use the target skill/behavior more frequently, teachers/practitioners gradually decrease the availability of the tokens. This is done by not reinforcing each and every instance of the target skill/behavior. For example, a teacher might provide the learner with ASD with a token every third time he uses the target skill/behavior. The target skill/behavior is reinforced on other occasions by providing social reinforcement (e.g., verbal praise, pat on the back, high five).

Module: Reinforcement

Step 7. Monitoring Learner Progress

Changes in behavior are recorded daily on the same data collection sheets that were used during the baseline data collection phase. Progress monitoring data are used to measure a learner's acquisition of the target skill/behavior as well as the effectiveness of the token economy program.

1. Teachers/practitioners use progress monitoring data to determine the learner's mastery of the target skill/behavior.
2. Teachers/practitioners use progress monitoring data to adjust the program when problems arise or if the target skill/behavior is not increasing.

The same data collection sheets that were used before the intervention began are used to monitor learner progress. By using the same data collection sheets, teachers/practitioners are able to track a learner's use of the target skill/behavior before and after a token economy program is implemented. The following data collection sheets provide examples of how teachers/practitioners can use these data sheets before, during, and after intervention.

Table 27. Example of Time Sampling Data Collection Sheet

Date	Time							Before, during, or after reinforcement
	9:00	9:05	9:10	9:15	9:20	9:25	Total	
7/26/08	X		X				2	<i>Before</i>
7/27/08	X	X					2	<i>Before</i>
7/28/08	X	X		X		X	4	<i>Before</i>
7/29/08		X	X	X		X	4	<i>Before</i>
7/30/08	X	X	X	X	X		5	<i>During</i>
7/31/08	X		X	X	X	X	5	<i>During</i>
8/01/08	X	X	X	X	X	X	6	<i>During</i>

Table 28. Example of Event Sampling Data Collection Sheet

Date	Takes toy from peer	Total	Before, during, or after reinforcement
7/26/08	X	1	<i>Before</i>
7/27/08	X	1	<i>Before</i>
7/28/08	X	1	<i>Before</i>
7/29/08	XXX	3	<i>Before</i>
7/30/08	XX	2	<i>During</i>
7/31/08	XXX	3	<i>During</i>
8/01/08	XXXX	4	<i>During</i>

Table 29 displays a list of potential problems and solutions when using token economy programs.

Module: Reinforcement

Table 29. Potential Problems and Solutions

Problem	Description	Solution
Unequal pricing of reinforcers	This happens when reinforcers are priced too low allowing learners to earn many reinforcers in a short period of time. Alternatively, reinforcers can be priced too high, resulting in learners giving up.	Role play with learner to demonstrate the details of the program. For example, a teacher might role play how to "save" tokens to get a higher priced item.
Token hoarding	Learners may accumulate large numbers of tokens and assume that they do not have to use the target skill/behavior or behave appropriately until the tokens run out. Hoarding may also result in a learner purchasing a large number of reinforcers in one day.	<ul style="list-style-type: none"> • Place expiration dates on tokens • Have a reinforcer sale in which all items are placed at a lower cost. This may decrease a learner's desire to hoard tokens.
Behavior deteriorates after fading tokens	May be a result of fading tokens too quickly	<ul style="list-style-type: none"> • Go back to a brief period of continuous reinforcement and then try a smaller ratio to fade tokens (e.g., every two or three hand raises to get a token) • Provide praise when giving a token • Immediately reward behavior with token • Offer opportunities to exchange tokens more frequently at the beginning of the program

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