Practical Components for Getting the Most from a Token Economy

Kera B. Ackerman, Ph.D., University of Kentucky, Mark Samudre, Ph.D., University of South Carolina, and R. Allan Allday, Ph.D., University of Kentucky
Mr. Jones, a fourth-grade general education teacher, and Ms. Moore, a special education teacher, have been working together to develop a token economy to support their student, Ben, who engages in challenging behaviors, such as refusing to complete tasks and destroying his work. Ben is diagnosed with oppositional defiant disorder and has an individualized education program (IEP) for emotional disturbance. Ben’s IEP team conducted a functional behavior assessment (FBA) and determined that his behavior is maintained by negative reinforcement in the form of escape from task demands. The IEP team used these results to develop a behavior intervention plan (BIP). One component of the BIP is a token economy to increase the number of tasks Ben completes and reduce his challenging behavior. Because Ben spends most of his day in Mr. Jones’s classroom, Mr. Jones volunteered to take the lead in its design. Mr. Jones found football cards to use as tokens to give to Ben for each completed task. The morning following the IEP meeting, Mr. Jones told Ben the new plan. Both he and Ben were excited. Unfortunately, over a span of several weeks, Ben’s task completion had not increased, he misplaced the few tokens he had earned, and he continued to engage in challenging behavior (which resulted in continued escape from task demands). Mr. Jones shared this with Ms. Moore. They scheduled an IEP team meeting to review the token economy.

The FBA process is a series of assessments designed to identify the function of a student’s behavior when a student exhibits challenging behaviors that are resistant to traditional classroom management systems. By gathering indirect (e.g., interview) and direct (e.g., observation) data that include the antecedent and consequence associated with the behavior, the IEP team can determine the function of the behavior. Using this information, the IEP team can identify the focus of the behavior change associated with the intervention, plan appropriate interventions for the BIP, and select the type of reinforcer that will increase the likelihood of the student engaging in the desired behavior. In Ben’s case, the FBA process revealed his behavior is maintained by escape from task demands. He engages in challenging behaviors, such as putting his head down or destroying his work, resulting in task avoidance, so the BIP included the development of a token economy to reinforce the desired behavior (i.e., task completion).

A token economy is a reinforcement system in which a student earns tokens following the demonstration of a desirable behavior (Alberto & Troutman, 2017). The student trades these tokens for specific backup reinforcers that would otherwise be unavailable (Soares et al., 2016). The backup reinforcers match the student’s interest and address the behavior’s function (i.e., the purpose of a behavior). Table 1 provides a list of common functions of behavior and possible backup reinforcers to use in a token economy.

Ben’s IEP team selected a token economy as an intervention in his BIP because it is an evidence-based strategy that is used to manage behaviors that negatively affect a student’s learning environment (Simonsen et al., 2008). Some examples of behaviors commonly addressed through token economies are disruptive behaviors (Himle et al., 2008), task completion (Romani et al., 2017), and task accuracy (Stevens et al., 2011). Thus, teachers benefit from being well versed in the use of a token economy, especially when addressing significant or chronic student behaviors.

Additionally, the IEP team selected a token economy because it offers several advantages specific to Ben’s current needs. First, token economies are a highly customizable intervention (Ivy et al., 2017). That is, the teacher can customize each component of the intervention to promote the improvement of socially significant behaviors (Ivy et al., 2017). Second, tokens are portable and easily dispensed without disrupting the flow of the classroom environment. This is especially important in Ben’s case because the intervention is for the general education classroom. Mr. Jones can dispense tokens when Ben engages in the desired behavior while continuing instruction and managing the classroom. Last, tokens are paired with a single backup reinforcer or a menu of backup reinforcers (i.e., list of items or experiences a student has identified as reinforcing). Using a menu of backup reinforcers increases the likelihood that the token will be resistant to satiation (i.e., decreased effectiveness due to overuse, such as too many food reinforcers) and fluctuating student motivations (Cooper et al., 2020; Moher et al., 2008). Ben has many interests and preferred activities that work well as backup reinforcers; therefore, the IEP team selected a token economy to incorporate these as reinforcers for task completion.

Conceptually, a token economy is simple to understand and consists of three steps. First, a student engages in a target behavior to earn a token. Second, the student exchanges a token for engaging in the behavior. Third, the student exchanges tokens for a preferred backup reinforcer. For example, Ben completes an assignment (Step 1). Mr. Jones walks past his desk and provides him with a token (Step 2) while praising him for maintaining his attention to the task, and later, during a previously agreed upon time, he exchanges his earned tokens for an item he identified as reinforcing, such as an additional 5 minutes of free time on the computer (Step 3). These three steps have social validity because they reflect similar adult behaviors. For example, adults (1) engage in work behaviors to (2) gain access to money (i.e., token) in order to (3) trade the money for a backup reinforcer (i.e., going on vacation).

Although a token economy is simple to understand, the procedural design can be challenging. This design comprises six non-negotiable components: (a) establishing an operationally defined observable and measurable target behavior(s), (b) pairing arbitrary tokens (i.e., neutral items) with social reinforcement and backup reinforcers, (c) identifying backup reinforcers, (d) determining a token distribution schedule, (e) setting up a token exchange schedule, and (f) selecting costs for backup reinforcers (Hackenberg, 2009; Ivy et al., 2017). Nevertheless, a recent review of the token economy literature found that researchers, and potentially teachers, are commonly omitting or vaguely describing the six components (i.e., 18 of 96 articles in the review sufficiently described and included each component; Ivy et al., 2017). To intervene appropriately on a target behavior, teachers must implement an intervention in its entirety and pay close attention to the procedural complexities. If lacking in technical precision, an intervention has a decreased probability that it will result in the desired change in behavior (Dunst et al., 2013). An omission
or underdeveloped plan of any of the six components can compromise the effectiveness of a token economy.

**Putting the T E am in T oken Economy Development**

As required by federal law (Individuals With Disabilities Education Improvement Act, 2004), various key personnel are involved in the FBA and BIP development; however, it is often the teacher(s) responsible for implementing the intervention. For example, consider a student, like Ben, who receives most educational services in a general education classroom but also receives supplemental math and reading instruction in a resource setting with a special educator. Alongside the parents and school staff who participated during the FBA and BIP process, both the general and special educator should be deeply involved in the development of a token economy as they will be the primary implementers.

The introductory scenario highlighting Mr. Jones and Ms. Moore lacks certain components of an effective token economy and does not fully involve key members of Ben’s IEP team (e.g., parents) who may have valuable information to provide. Any intervention meant to address challenging student behavior, but lacking in procedural fidelity (i.e., not implemented as intended), can have a detrimental effect or, as Mr. Jones and Ms. Moore learned, a noneffect on student behavior. Including all key members in the development of a token economy and adhering to the following six components will improve its effectiveness.

**Component 1: Begin With Behavior**

The first step is to identify a target behavior and operationally define it in observable and measurable terms. This is essential to develop an effective BIP and crucial to reinforce the desired behavior in a token economy. Behaviors targeted in token economies include a wide spectrum (e.g., walking in line quietly, entering and exiting the room orderly, task completion, remaining in assigned area). It is best practice to focus on behaviors that can be seen and heard rather than on cognitive states that can be assumed (e.g., “will know when to”; Alberto & Troutman, 2017). Additionally, the target behavior should be the expected behavior as opposed to an unwanted behavior (e.g., “walking” instead of “stop running,” “remain in assigned area” instead of “stop roaming the class”).

A common error when identifying a target behavior is mistakenly identifying a nonbehavior rather than a behavior. To intervene appropriately on a target behavior, teachers must implement an intervention in its entirety and pay close attention to the procedural complexities.

Alternatively, a dead man cannot act out behaviors such as “looking at the teacher” or “completing a given task”; therefore, these behaviors do not pass the dead man’s test. To evaluate the appropriateness of the target behavior (Mallott & Trojan Suarez, 2004). For example, assume that a student’s target behavior is “not cursing,” “sitting still,” or “not talking.” A dead man can engage in these behaviors; therefore, these could be target behaviors.

Some key questions to ask when identifying a target behavior are (a) What behavior is most problematic or negatively impacts the learning environment? (b) Where and when does the behavior occur most frequently? (c) Is the behavior discrete (e.g., talk out) or long-lasting (e.g., task engagement)? (d) Is this a behavior that occurs multiple times per day (e.g., transitions) or only once per day (e.g., homework).

<table>
<thead>
<tr>
<th>Function of the behavior</th>
<th>Backup reinforcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain attention</td>
<td>Tell one joke to class before recess</td>
</tr>
<tr>
<td></td>
<td>5 minutes of basketball with teacher</td>
</tr>
<tr>
<td></td>
<td>5 minutes of free time with peer</td>
</tr>
<tr>
<td></td>
<td>Lunch at the “friend” table</td>
</tr>
<tr>
<td></td>
<td>Lunch in room with teacher</td>
</tr>
<tr>
<td>Gain access to activity or tangible item</td>
<td>5 minutes of computer time</td>
</tr>
<tr>
<td></td>
<td>5 minutes of coloring</td>
</tr>
<tr>
<td></td>
<td>5 minutes of comic books</td>
</tr>
<tr>
<td></td>
<td>Choose from treasure box</td>
</tr>
<tr>
<td></td>
<td>Snack</td>
</tr>
<tr>
<td>Escape attention, setting, or task</td>
<td>5 minute break at desk</td>
</tr>
<tr>
<td></td>
<td>5 minute break in beanbag</td>
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<tr>
<td></td>
<td>Free homework pass</td>
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<tr>
<td></td>
<td>Free classwork pass</td>
</tr>
<tr>
<td></td>
<td>Errand to office</td>
</tr>
<tr>
<td>Gain or escape sensory stimulation</td>
<td>Squeeze a stress ball</td>
</tr>
<tr>
<td></td>
<td>Chew gum</td>
</tr>
<tr>
<td></td>
<td>5 minutes of jumping</td>
</tr>
<tr>
<td></td>
<td>5 minutes of listening to music</td>
</tr>
<tr>
<td></td>
<td>5 minutes of silence</td>
</tr>
</tbody>
</table>

Note. Reinforcers should be selected based on individual preferences (e.g., preference assessment; King & Kostewicz, 2014).

To intervene appropriately on a target behavior, teachers must implement an intervention in its entirety and pay close attention to the procedural complexities.
When developing a token economy for multiple classrooms, each team member must provide input on these questions, as student behavior may change between environments. In the earlier scenario, Ben does not exhibit his challenging behavior to the same level across his classes. He completes all his assignments in both his art and computer classes but does not complete assignments in Mr. Jones’s class. Failure to consider these questions may compromise the token economy’s use across multiple classrooms. For a token economy developed as part of the BIP, these questions should be addressed in the formal FBA process.

When identifying a target behavior, the teacher will consider the impact of the student’s behavior. Academically, a teacher may report that a student is not completing the tasks, thereby affecting mastery of concepts. Socially, the student may engage in behaviors that disrupt the learning of others. The teacher can rank-order multiple concerns related to academic and social success from most to least problematic. This provides a hierarchy of behaviors and can be a point of reference as to future behaviors to target following the mastery of the primary target behavior. This ranking allows the selection of the most impactful behaviors when circumstances do not allow the token economy to address each target behavior; however, behaviors that compromise student safety (e.g., physical aggression, self-injurious behaviors, elopement) should always take priority (Cooper et al., 2020).

Alongside Ben’s parents and school personnel who participated during the FBA and BIP process, Mr. Jones and Ms. Moore reflected on Ben’s progress. When Ben first enrolled at the school, he would often elope (i.e., run away) from assigned areas when given a nonpreferred task demand. Mr. Moore reported that Ben has not eloped recently; rather, he is more likely to remain at his seat without completing any of his assigned work or destroy the work given to him. The IEP team discussed his current academic performance and expressed concern that his behavior of avoiding nonpreferred academic tasks was adversely affecting his mastery of learning objectives, as evidenced by his failing grades. Because Ben is no longer in immediate danger (as he was when he would elope), everyone decided that the focus of the token economy should be to increase his task completion. The IEP team applied the dead man’s test to this target behavior (i.e., task completion). They agreed that this behavior passed the test and concluded that their target behavior was appropriate. They also discussed whether a token could be provided each time Ben completed a task. It was determined that this could be done.

Once the teacher identifies the target behavior, they should operationally define the behavior(s) that will earn a token. In other words, the teacher should identify what the student will be doing when the desired change is observed (Alberto & Troutman, 2017). This can be a challenging component of the token economy development because more than completion? (e) Can data be collected on this behavior? and (f) Is providing token reinforcement for this behavior doable given the other responsibilities in the classroom? Although not an exhaustive list, these questions can help guide identification of the target behavior.

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Component 3: Establish Backup Reinforcers

A token is conditioned as a reinforcer because it serves as a proxy to other, more desirable backup reinforcers. However, the overall effectiveness of a token economy largely depends on student motivation to earn the backup reinforcers. Being aware of behavioral functioning also plays a role in determining backup reinforcers. For example, backup reinforcers for behaviors like Ben’s, which appear to be maintained by avoiding tasks, should allow for a temporary and socially

one person must be able to verify the occurrence of a target behavior. Words that are open to interpretation (e.g., “appreciate,” “understand,” “recognize”) should be avoided because they make it difficult for those implementing the token economy to determine if the behavior occurred or not (Alberto & Troutman, 2017). This is especially important if multiple teachers will be implementing the token economy.

Writing clear operational definitions can lessen the ambiguity in measuring the behavior (i.e., what counts as an occurrence or nonoccurrence). Operational definitions should (a) describe the physical characteristics of the behavior, (b) explain what the behavior looks like in clear and precise terms, (c) avoid overly subjective phrases (e.g., “not angry”), (d) include examples and nonexamples, and (e) explain what counts as one occurrence (Cooper et al., 2020). In other words, a person who is not familiar with the student should be able to read the operational definition of the behavior and collect accurate data. For example, if a very broad and unspecific statement, such as “good behavior,” is the operational definition of a target behavior, it is not likely that two people could reliably collect data and deliver a token. A more detailed explanation of what good behavior (e.g., following directions the first time they are given) looks like is needed to determine when to provide a token. Additionally, a clear operational definition provides the necessary information so the teacher can explicitly teach the desired behavior.

The teacher should explain the expected behavior to the student using examples and nonexamples from the operational definition and then scaffold support and provide explicit feedback while the student practices the behavior.

The IEP team needed to write an operational definition of Ben’s target behavior to make it clearly measurable and observable. Specifically, Mr. Jones and Ms. Moore wanted to ensure they could both reliably identify when the behavior occurred, as they would be the primary individuals collecting data and dispensing tokens. They decided that task completion would be defined as “completing an assignment within the allotted time or initiating an assignment but not finishing it when the schedule is restricted (e.g., starting and maintaining effort on a task but not completing it when it is time to transition to a new task).” Examples included completing a worksheet, reading aloud a designated passage, and working through multiple steps of an assignment. Nonexamples included Ben refusing to complete an assigned task (e.g., laying his head on his table, verbally stating his refusal, destroying his assignment), initiating a task but not completing it within the allotted time due to minimal engagement with the task, and completing a task but providing nonsensical or consistently inaccurate responses (e.g., scribbling on the assignment). Mr. Jones and Ms. Moore could easily measure task completion defined in this manner, and both agreed they could identify and dispense a token based on this definition.

Next, the IEP team developed a plan for teaching the expected behavior. Ms. Moore suggested they explain the target behavior to Ben and then practice examples and nonexamples during his small-group resource time in her classroom. Mr. Jones could join them in the resource room and provide explicit feedback to Ben as he practiced.

Component 2: Make the Token Meaningful

Once a target behavior is identified and operationally defined in measurable and observable terms, the teacher must “condition the token” to make it meaningful to the student. To do this, the teacher pairs the token, which is a neutral item and inherently arbitrary at the onset of the token economy (see Figure 1 for an example list of tokens), with the backup reinforcers and social reinforcement (e.g., praise, high fives). Pairing with social reinforcement is important because the goal is to eventually fade the use of the backup reinforcers. It can be beneficial to select a token that reflects the student’s interest (e.g., sport, character, game) to help expedite conditioning the token. To pair the token with backup reinforcers, the teacher verbally describes the contingencies that will result in access to the reinforcer, for example, “You will earn one token for each assignment you complete. After you receive two tokens, you can cash them in for 5 minutes on the computer, or you can save your tokens to cash in for a bigger reward.”

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appropriate escape from task demands (see Table 1). Teachers can select reinforcers using either informal or systematic procedures. To generate a list of possible backup reinforcers informally, the teacher can simply ask the student and others close to the student (e.g., parent) for input. A more systematic manner to identify reinforcers is to conduct a preference assessment (King & Kostewicz, 2014). A preference assessment establishes a hierarchy of potential reinforcers from less to highly preferred (Chazin & Ledford, 2016). Teachers provide the potential reinforcers and observe which the student selects to establish preference.

As seen in the following scenario, Ben is able to tell the teachers which items or activities he would prefer. From the list Ben provides, the IEP team generates a menu of backup reinforcers that are easily introduced, removed, and limited to 5 minutes (Stainbrook et al., 2015).

Mr. Jones was certain Ben would want to use his tokens to earn free time on the computer because, during indoor recess, that is where he gravitated. However, Ms. Moore suggested they ask Ben what types of things he would like to earn and then develop a list of reinforcers to be used based on that information. Ms. Moore

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explained that identifying multiple backup reinforcers might help guard against times when Ben might not be motivated to work for time on the computer because he just spent a lot of time on it during indoor recess. Mr. Jones and the rest of the team agreed. They decided it would be best to start a list of backup reinforcers they thought would be of interest to Ben. From the information gleaned during the FBA process, they knew their list must allow Ben to access a tangible reinforcer (i.e., a preferred activity or object, such as computer time or a favorite book or toy) but also allow him to escape task demands. To ensure these backup reinforcers were motivating and valuable to Ben, they decided to ask him to review their list and identify additional items he might want to earn. The team and Ben decided on the following items: (a) 5 minutes of free time on the computer, (b) 5 minutes of free time on the iPod, (c) 5 minutes of listening to music on an iPod, (d) 10 minutes of time alone when Ben can rest at his desk, and (e) reading a comic book from the classroom library.

Component 4: Set a Schedule for Token Distribution

Teachers can distribute tokens based on a certain number of occurrences of the target behavior (i.e., fixed ratio; Tarbox et al., 2006) or based on a passage of time (i.e., fixed interval; Cooper et al., 2020). For example, a student may receive a token for every task completed or for every two tasks completed, which would be a fixed ratio. Alternatively, a student may be awarded a token every 2 minutes (i.e., fixed interval) if they engage in predetermined behaviors (e.g., looking at the teacher when the teacher is speaking). The schedule should include a high rate of reinforcement at the beginning of the token economy. This means that initially the student must easily earn tokens in order to see the benefits of engaging in the expected behaviors. If the student does not earn tokens, they will not value the system. Most importantly, the teacher should tell the student what to do to receive a token (Ivy et al., 2017).

Additionally, the teacher must consider how to fade the use of the token economy (i.e., remove the intervention over time). To do this, the teacher will need to establish a plan. One plan is to thin the token distribution schedule (e.g., provide a token after the completion of two tasks as opposed to one task, provide a token every 3 minutes as opposed to 2 minutes). The teacher can graph frequency data to make determinations on thinning the token distribution schedule and fading the use of the token economy. The IEP team decided Ben would receive tokens on a fixed ratio. Each time he completed a task, as determined by the operational definition they created, he would receive one token. Mr. Jones and Ms. Moore would explain this rule to Ben and answer any questions he had about what he needed to do in order to receive a token. Ms. Moore suggested they write the rule “One completed task = one token” on a card and place it on Ben’s desk as a reminder.

Component 5: Set a Schedule for Token Exchange

Next, the teacher should determine how many tokens are required before gaining access to a selected backup reinforcer (Stainbrook et al., 2015). Like Component 4, the schedule should include a high rate of reinforcement initially to allow the student to access the backup reinforcers frequently. This means that, to begin, the teacher might want to require a small number of tokens to gain access to the backup reinforcers. As with Component 4, the ultimate goal is to fade the use of the token economy completely. The teacher can plan to increase the number of tokens necessary for exchange (i.e., seven required for exchange for a backup reinforcer as opposed to five) as the student learns that tokens lead to access to a backup reinforcer (Stainbrook et al., 2015). By reviewing the graphed frequency data, the teacher can make an informed decision on fading the token economy.

The team was ready to create the token exchange schedule. Given the concern for his current academic grades, Ben’s parents mentioned requiring that he earn five superhero stickers (i.e., complete five tasks) before he could trade them in for access to a reinforcer. Mr. Jones shared his experience working with Ben in the classroom and suggested that requiring five tasks might not be feasible given how he wished for Ben to achieve success with use of the token economy. Success would require a more practical and attainable goal for him to reach at the onset of the token economy. Ben needed to gain easy access to the tokens and backup reinforcers initially for him to see the benefits of completing his work. Mr. Jones stated that he would fade the token economy by increasing the required number of tokens Ben needed to earn before he could select from his backup reinforcers. He would collect data daily on the number of tasks Ben completed (i.e., number of tokens earned) and use those data to inform the increased requirement as Ben demonstrated success.

The parents agreed. The school psychologist recommended that the initial requirement be two stickers (i.e., two tasks) before he was able to trade in for his backup reinforcers. All members of the IEP team believed this goal was attainable for Ben.

Component 6: Determine the Cost for Backup Reinforcers

A teacher can decide the cost of backup reinforcers in terms of tokens in several ways. One method is to exchange tokens for one reinforcer (i.e., one item or activity). A second method consists of the student selecting from a menu of several reinforcers in which all reinforcers cost the same number of tokens (Hackenberg, 2009; Ivy et al., 2017; Stainbrook et al., 2015). A third method involves a menu of reinforcers that all cost a different number of tokens (Akin-Little & Little, 2004). When using the third method, the student can choose to save the tokens and accumulate more so that they can exchange them later for a reinforcer rated at a higher value. It is vital to begin the token economy with an understanding that the student must experience success earning tokens and exchanging them for backup reinforcers. This means that the teacher should set costs for moderately preferred items at a lower price so the student can gain access more quickly. The more interaction the student has with accessing tokens and backup reinforcers, the more likely they will buy in to the system.

The IEP team then discussed ways in which to structure the list of backup reinforcers into a menu of options and decided the token economy would work best for Ben if different reinforcers cost a different number of stickers. This would allow Ben to spend his tokens immediately or hold them for a larger, more valuable reinforcer. Highly preferred activities would cost more stickers, and moderately preferred activities would cost fewer. Using the minimum requirement of two tokens before

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Highly preferred activities</td>
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<tr>
<td>Moderately preferred</td>
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<td>Low preference</td>
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accessing a reinforcer, the IEP team set up the following menu:

- 5 minutes of free time on the computer = 2 tokens
- 5 minutes of free time on the iPad = 2 tokens
- 5 minutes of listening to music on an iPad = 2 tokens
- 10 minutes of time alone when Ben can rest at his desk = 3 tokens
- Reading a comic book from the classroom library = 4 tokens

With careful attention to the six components, a teacher can increase the probability for a desirable change in student behavior.

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