

Increasing Elementary Students' Behavior Engagement through Applying Token Economy Technique

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Abstract— The purpose of present study was to examine the effect of token economy technique on increasing students' behavior engagement. The single subject design within multiple baseline across behavior was implemented on three students from SD Negeri Plalangan 1 Semarang. The behavior targets were to decrease duration of joking and to increase frequency of hand rising behavior during thematic learning. Results of present study showed that the token economy technique was effectively to reduce the duration of jokes and increase the frequencies of hand rising. This study affirmed the efficacy of token economy technique on increasing students' engagement.

Keywords— *behavior engagement; token economy; elementary school students*

I. INTRODUCTION

Currently, various studies have shown the impact of students' engagement in improving student achievement [1], [2][3]. Therefore, the teacher is concerned to improve student engagement in order to optimize student learning performance as long as learning. Kuh defines student engagement as effective student participation in educational practice both inside and outside the classroom that leads to measurable results and the extent to which students engage in school activities [4].

Student engagement divided into three dimensions, that are behavioral engagement, emotional engagement, and cognitive engagement [5]. Behavioral engagement is the presence and participation of students to engage in academic, social, and extracurricular activities. Emotional engagement is the attitude of students when interacting with people or activities around. Cognitive engagement is an attempt to understand and master the skills and learning contents.

Student engagement enables students involving their cognitive, behavioral, and emotional aspects during learning process in the classroom. As results, students can attain high achievement and optimal learning performance [6]. A study from Finn and Zimmer [7] showed that behavior engagement in elementary school was negatively correlated to dropout behavior level and positively correlated to achievement level. Further, Finn and Kayla [7] argued that students' disengagement had impact on achieving lower achievement, more likely to experience frustration, and receive negative responses from teachers. Specifically, improving students' engagement during learning in the classroom is very important, and this study was specifically intended to

examine the impact of application token economy techniques on behavioral engagement.

Increasing students' engagement can be attained by providing reinforcement for students. The usage of positive reinforcement is important to encourage and maintain appropriate academic behavior and learning as well as engagement [8]. Teachers can manage and schedule the reinforcement giving for improving students' engagement through applying token economy procedures. Token economy is a behavior modification program which is implemented by requiring students get a number of token after performing appropriate behavior; then, the token can be exchanged with the backup reinforcement or reward [9].

Token economy is a strategy of the positive reinforcement which can be applied as a driver for students implement the appropriate behavior [10], including behavior engagement. Moreover, behavioral engagement is appropriate and effective learning behaviors which are related with students' attendance and participation during learning activities in the classroom, such as doing learning tasks, actively asking questions, expressing opinions and idea during discussions, and following teachers' instructions. Behavior modified by token economy includes the reduction of behaviors that interfere with or ignore the lesson (maladaptive behavior) and increase the academic response (adaptive behavior) [11]. This disruptive and disinterested behavior is a lowly form of behavioral engagement, while the academic response itself is a form of high engagement behavior. Thus, it can be predicted that token economy is an effective strategy to improve behavior engagement.

II. METHODS

A. Participants

The subjects were three students aged 10.1-10.3 years old males, namely AK, IL, and AN. They were grade IV students of public elementary school. The three students presented inappropriate behavior during class which indicated as low behavior engagement, particularly high duration of joking and low frequency of hand raising for asking and arguing. The subjects were passive and often rowdy in class by joking with their friends during class learning activities.

B. Assessment Procedures

Data collection was conducted with three direct observation phases: (1) pre baseline phase, (2) baseline phase, and (3) intervention phases. Pre-baseline assessment phase was conducted for twice and 2 to 3 hours each during thematic learning. Anecdotal reports was applied as observation guidance which assess the time and description of student activity. Based on the pre baseline observation, the target of ehaviors were decided. Data, then, were analyzed on the behavior that emerged. While in the baseline and intervention phases were carried out for 14 times and 3 hours each of thematic lesson. The recording duration contains the number of start and end times of joking behavior, while the event recording contains the number and frequency of the hand raising in order to ask or to argue.

C. Interobserver Agreement

This study used inter-observer agreement to check the reliability of research data. Inter-observer agreement was performed for 4 times during the baseline phase. In target behavior I (duration of joking) inter-observer agreement showed the percentage agreement between 87-99 (Mean = 94%). Whereas in the target behavior II (frequency of hand raising for asking or to arguing) the overall inter-observer was 100.

D. Procedure

This study was conducted by implementing a single subject design of within multiple design across behavior. This design was applied to change the behavior target which consisted of two kind of behavior, namely (1) reducing the duration of jokes,

and (2) increasing the frequency of hand raising for asking or arguing. Researchers conducted observations during the study from the pre-baseline phase, baseline phase until the end of intervention phase. Moreover, researchers also managed the reinforcement giving.

Pre-baseline phase was conducted to collect data of student learning behaviors in the class that indicated the absence of behavioral engagement. Assessment result data during pre-baseline was used to set target behaviors

Baseline phase was carried out to assess data on joking levels and frequency of hand-raising for asking or arguing during thematic learning class. Baseline data observation were performed for 4 times on joking behavior and for 10 times on on hand-raising in order to ask or to argue behavior.

Finally, *intervention* phase was implemented by applying token economy procedures to reduce joking duration and to increase the frequency of hand-raising for askong or arguing. Intervention to joke behavior was assessed as much as 10 times, while the behavior raises hands 5 times.

Students were obtaining tokens in the form of stickers if they show target behavior for 3 hours of thematic. The rule of token procedures are 1) if the students are able to decrease the joking duration for a certain duration of time, they will accept more tokens; and 2) if the students are able to raise his hand in for asking or arguing, they will accept one token. The students will accept the token as soon as after the subject is ends through a 'gift achievement card'. After students collected a certain amount of token, they can be redeemed the token with a back-up reinforcer, which is an object or activity that the student likes and wants.

III. RESULTS AND DISCUSSION

A. Descriptive Data

Table 1 showed the descriptive data of observation results. As seen of Table 1, the data in the calculation of the mean shows that seen from the mean total indicates that there has been a decrease in joking behavior from 67.60 minutes to 7.82 minutes and the increase in hand-raising in order to ask or to argue behavior from 1.89 times to 10 times.

TABEL 1 DATA DESCRIPTION OF OBSERVATION RESULTS

Behavior	Subject	Phase			
		Baseline		Intervention	
		Mean	SD	Mean	SD
Joking*	AK	22.41	3.13	1.72	1.94
	IL	23.92	2.09	2.10	1.89
	AN	21.27	2.76	4.01	2.63
Total		67.60	7.99	7.82	6.46
Hand Raising for Asking or Arguing**	AK	0.56	0.73	3.20	1.30
	IL	0.89	0.78	3.60	1.67
	AN	0.44	0.53	3.20	1.30
Total		1.89	2.04	10.00	4.28

Note: *calculated in minutes **calculated in unit of frequency

B. The Effect of Token Economy on Student Engagement

Behavioral trend of AK, IL and AN presented visually in graph as seen in Figure 1. The analyze of level of performance, rapidity behavior change, trend of performance, and percentage of overlapping data were conducting based on the visual graphics.

For joking behavior, rapidity behavior change occurs in each observation session. This findings indicated that in the baseline session the behavior tends to increase in the AK and IL except for the second observation session and the overall AN session, whereas in the intervention session the behavior tends to decrease in the AK and IL except in the seventh, eighth, and twelfth observation sessions, and on AN except in the sixth, eighth, and twelfth sessions. Joking behavior significantly dropped and consistently persisted during the intervention phase. It reflected the trend of joking behavior were increase in the baseline session then decrease in the intervention sessions. The percentages of overlapping of small data were 0% for all participants.

Although all participants had changes in joking behavior, but each participants showed a different pattern of change, especially in AN which showed a highest mean than others two participants. It seemed that the cause was the seating position. AK and IL sat side by side, while AN sat with other students who did not accept token economy intervention. In addition,

new inappropriate behaviors emerged at the 9th observation session from AK and IL. They wrote and replied letters which containing jokes and chats. To maintain the behavior of jokes remains low, the researcher confirmed the contract as a consequence of their letter-writing behavior. Confirmation of the contract is conducting by informing all participants that correspondence for joking will be recorded as an additional time for their jokes. As a result, at the next observation session, the correspondence behavior for joking purpose were no longer appears.

In the behavior of hand-raising for asking or arguing, the rapidity behavior change occurred in each observation session. The observation results indicated that in the baseline session the behavior tends not to appear in the first, second, sixth, and eighth for AK. For IL the hand-raising behavior disappeared in the third, seventh and ninth observation sessions. For AN, the hand rising behavior appeared from 0 to 1 times, whereas during intervention sessions the hand-raising behavior tended to raise at each session except at the fourteenth session which decrease for all participants. Hand-raising behaviors significantly went up and consistently persisted during the intervention phase. The percentage of overlapping were 20% for AK and IL, and 0% for AN.

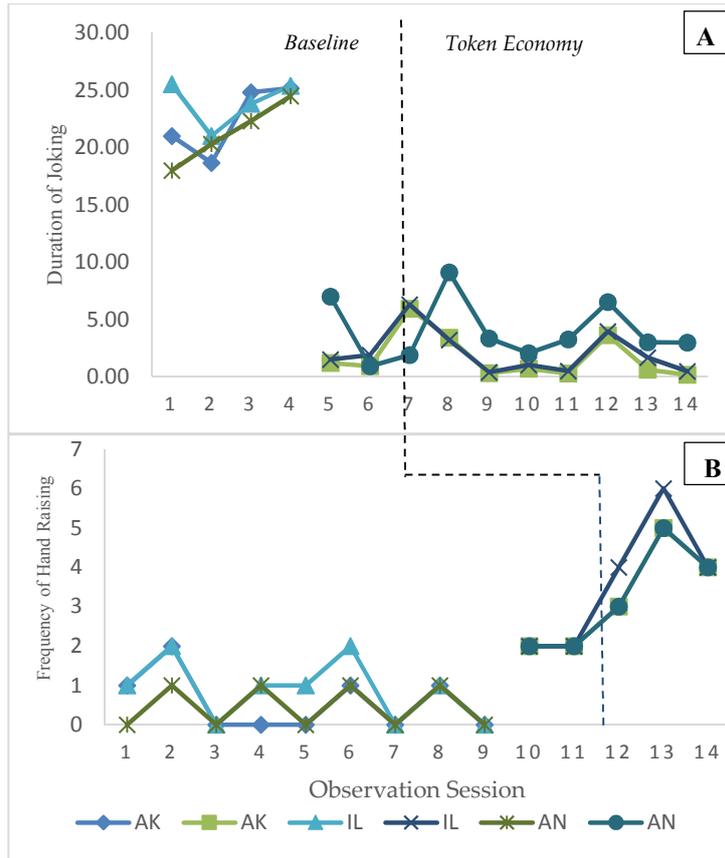


Figure 1 Graph of Observation Results for Joking Behavior (A) and Hand Raising for Asking or to Arguing Behavior (B)

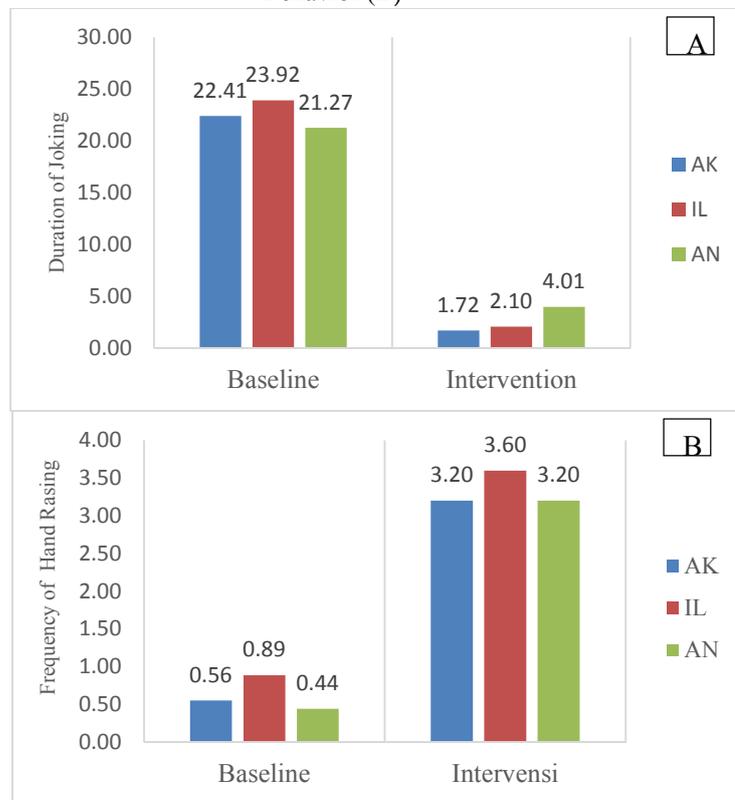


Figure 2 The Mean of Joking Behavior (A) and Hand Raising to Ask or to Argue Behavior (B) from AK, IL, and AN

In short, the change in joking and hand-raising behavior or asking or arguing changed during baseline and intervention phases for all participants as seen in Figure 2. The duration of joking were high in baseline session, but low in intervention session. In contrast, the frequency of hand-raising for asking and arguing were low in baseline and high during intervention session.

C. Discussion

This study was intended to test the effect of the token economy technique in improving students' behavior engagement. Quantitative results and visual graph analysis showed that token economy technique effectively used to decrease the duration of joking and to increase the frequency of hand raising to ask or to argue which are indications of behavior engagement. Thus, it can be concluded that token economy technique was effective technique to improve students' behavior engagement in the class.

The findings of this study are relevant to previous research findings conducted by Aljunaish[12] which suggests that the use of token economy was found as one of the most effective methods of behavioral regulation to increase student motivation in learning. Klimas & Mc Laughlin[13] also put forward the results of his research that token economy techniques can improve students' social and academic behavior. Changed behavior includes timing of completion of tasks, number of tasks to be completed, and the frequency of inappropriate behavior. In addition, Sunawan and Yani [14] also suggested that classroom management strategies using effective reinforcement tokens were used to improve on-task student behavior in following learning.

The findings of this study suggested that student conditioning in an interesting way is an important effort to improve behavior engagement. According to the results of Subramaniam [15], an interesting situation game model could be a motivator in improving student engagement in learning. Relevant to the study, the findings of this study indicate that the use of token economy can be an interesting game in providing reinforcement to stimulate increased behavior engagement. Specifically, when subjects were given by the intervention in the form of token economy, the students were able to decrease the joking duration and increase the frequency of hand raising to ask or to argue so that they would tend to pay more attention to the teacher's explanation, directly perform the task when given the task, and try to actively engage in the learning activities in the class, such as answering questions, reading tasks that have been done, and so forth.

Token in this study serves as a reinforcer which can then be exchanged with back up reinforcer so that students are encouraged to display the expected behavior (reduce the duration of jokes and increase the frequency of hand raising to ask or to argue). This is

consistent with the explanation of Comaty, Stasio, and Advocate in Eford[10] which suggests that token economy is a positive reinforcement in which clients receive tokens when they display the desired behavior. Once the participants have gathered some evidence, he can transform them into one of the meaningful reinforcers.

The stronger the value of back up reinforcer in token economy, the greater the strength of reinforcement behavior that will be displayed [16]. Before the implementation of token economy techniques need to be done first to find out something that really valuable for students to be back up reinforcer. Therefore, before conducting the intervention the researcher interviews the research subjects to find out the gifts they really want. This reward is a back-up reinforcer that can be obtained after the subject collects a number of tokens. The impact, when the intervention implemented can be effective because subjects tend to like and challenged to display the expected behavior and collect all tokens to be exchanged for the gift they really want.

The results showed that the three study subjects albeit changed behavior, but each subject showed a different pattern of change, especially on the subject of AN which showed a change in joking behavior is lower than the AK and IL. This seems to be due to the sitting position of AK and IL which is one table, whereas AN sits adjacent to LE which is a student who does not get any intervention. As a result, LE becomes an out-of-control stimulus for AN's joking behavior. The implication is that the application of token economy is important to be combined with stimulus control techniques.

In addition, during the intervention process at the ninth observation session, a unique behavior occurs in AK and IL, which are seen several times as inappropriate behavior in the form of writing and replying to letters about jokes and certain chats. This behavior occurs several times, although not dominant. The appearance of this behavior is not surprising given that Iwata et.al. in Alberto & Troutman [17] has explained that when a student is given a positive reinforcement to decrease a behavior, he has the right to do other activities. Consequently, when subjects carry out implementing target behavior, they still have the opportunity to elicit other inappropriate behaviors.

Responding to the situation, the researcher informed again about the contract boundary in token economy. Furthermore, with proper contractual understanding the subjects can stop the communicating activity through a letter. The findings of this study are reminiscent of teachers or counselors who employ token economy techniques to express the contract boundaries in token economy clearly so that students do not make their own interpretations of appropriate behavior. Clear contracts provide

appropriate or inappropriate behavior guidelines for students.

Overall observation sessions showed that when given the intervention in the form of token economy, there was consistency of significant change when compared with the baseline condition. The consistency of this change occurs during the intervention conditions so the question arises that 'whether behavioral change remains consistent post-intervention?' Unfortunately, data from this study is not possible to answer the question. Therefore, further research is expected to use the modification, behavior of single subject design within a reversal design that allow researchers to return to the baseline phase after the intervention phase [17]. Comparison of the two baseline conditions before and after the intervention is necessary to verify the functional relationship of the intervention to the behavior. The question implicates practically that classroom teachers should apply token economy procedures consistently to get the desired behavior change result optimally. In addition, since single subject design research can not be generalized it also recommends for subsequent researchers to use intervention in different sampling groups viewed from place, school, cultural background, and so on.

IV. IV. CONCLUSION AND IMPLICATIONS

This research is a single subject design study within multiple baseline across behavior that focuses on changing student behavior indicated by low engagement behavior with token economy implementation. The target behavior modified in this study is to decrease the duration of jokes and to increase the frequency of hand-raising to ask or to argue in three fourth-grade students during the thematic learning. Based on the results and discussion can be concluded that token economy techniques can reduce the duration of jokes and increase the frequency of hand raising to ask or to argue as indication of behavior engagement.

Based on the findings of this research, it can be developed suggestions for the practice of learning and further research. Practical suggestions for counselors and classroom teachers: (1) it is expected that there will be cooperation between teachers and counselors in implementing token economy techniques to improve student engagement; (2) the application of token economy in learning is expected to be combined with other stimulus control techniques so that its effect on the improvement of behavior engagement is higher; and In applying token economy expected that teacher or counselor can arrange contract and rules that clear, specific, not multi interpretation, and focus on positive behavior. Suggestions for further research are: (1) subsequent research is expected to apply reversal design so that consistency of long term impact of token economy technique to students' engagement can be clarified; and (2) future research is expected to involve different subject groups viewed from place, school, cultural background, and so on.

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