I. Introduction

A student with mental retardation may have difficulty in both learning and social interaction. Some of them show challenge behavior. These children will need to be taught adaptive behaviors and social interaction. For this reason, most of schools for the mental retardation want to teach students adaptive behaviors, social interaction and decrease behavior problems. As principal, I also want to increase my students a adaptive skills, social interaction and decrease challenge behaviors.

The human being behave basically by physiological needs and external stimulus. Eating is closely associated with physiological needs, and edible items are may also be a strong external stimuli. Things like also toys and money are a kind of external stimulus,. The intangible reinforcer such like praise and honor also influences people’s behavior. Have been living with mental retarded students for decades, I often thought the mechanism of human behavior and reinforcement that influence desirable behavior. Most students with mental retardation were also affected by primary reinforcers such as food and goods. Most of students with mental retardation have a strong needs to eat. They also want to get praise, commendation and honoring the more school grades go up.

The one of teaching methods applying students with mental retardation is token economy that give students both material reinforcement and social reinforcement. A token economy is a form of behavior modification designed to increase desirable behavior and decrease undesirable behavior with the use of tokens. Individuals receive tokens immediately after displaying desirable behavior. The tokens are collected and later exchanged for a meaningful object or privilege. (Encyclopedia of Mental Disorders, 2007).

Token systems have been successfully employed as behavior management and motivational tools in educational and rehabilitative settings since at least the early 1800s (Kazdin, 1978). More recently, token reinforcement systems played an important role in the emergence of applied behavior analysis in the 1960–70s (Ayllon & Azrin, 1968; Kazdin, 1977), where they stand as among the most successful behaviorally-based applications in the history of psychology.

Empirical evidence supports a variety of individualized intervention strategies for individual students with intensive problem behavior (Marquis et al., 2000).
A few researches indicated that the effects of teaching students with problem behavior can be more increased in an environment in which live (March & Horner, 2002; Safran & Oswald, 2003). Based on these result, this research was implemented in whole school which in students study and live spending a lot of time of a day.

The purpose of this research is to identify the effect of a school-wide token economy system (SWTES) on learning attitude, social interaction and challenge behavior for mental retardation at Hanguk Seonjin Hakgyo, the national special school.

For this study, the following alternative hypothesis was set:
A school-wide token economy system has an effect on learning attitude, social interaction, and challenge behavior.

II. Literature Review

B. F. Skinner worked with operant conditioning. Operant conditioning involves developing relationships between various consequences and behaviors in order to achieve the desired outcome. Skinner used positive reinforcers to strengthen behaviors that he wanted to see occur and used negative reinforcers to discourage behaviors that were not desired (Zirpoli, 2005).

Over the past 50 years, behavior management systems have continued to grow based on Skinner’s research using operant conditioning as a method of improving social conditions (Porter, 2007).

Token economy system is based on principals of operant conditioning and the work of B. F. Skinner. Historically, token economies have been the most widely used behavior management procedure in residential, in-patient, school, and correctional settings (Jones, Downing, Latkowski, Ferre, & McMahon, 1992). The token economy is a behavioral procedure that administers an exchange unit or token (for example, a coupon, poker chip, a penny, a hole punch in a card or small cardboard cutout) to an individual contingent on specifically defined behaviors (Dickerson, Tenhula, & Green-Paden, 2005).

The use of token economy systems have not been without controversy as they continue to grow in usage. One of the main criticisms is that these economics tend to decrease the individuals intrinsic interest in the activity (Vasta, 1981). By using rewards to get the desired outcome for the activity, many researchers think that we are only stimulating the extrinsic motivations in the students and not the intrinsic (Weeks, 2006; Porter, 2007).

Thomson (2006) suggests there six main elements that every token economy has to have to be successful and they are as follows: chips can be counted; the clear definition of target behavior; the need to strengthen supplement; a system for exchange of chips; systems for data entry and ability to perform by the staff. While that is used special class token economy system and to load has brought favorable results.

There are several key elements to every token economy. These elements may vary in appearance from each location, but are usually found in each setting (Porter, 2007).

Token reinforced systems have been introduced into special education classes with generally favorable results. Changes in the quality and levels of student behavior have been observed with various types of classroom performance
variables, including both those concerned with academic achievement and with shaping appropriate classroom response repertoires (Knapczyk & Livingston, 1973).

One example of a token economy system in a special needs classroom is where the students receive stamps to put in a payment book. The students receive a stamp each day that they meet or exceed their goals or desired behaviors. When they received a specific number of stamps, they cash in their payment books for a reward (Turnbull, Turnbull, Shank, & Leal, 1999). Zecker (2005) believes that special needs children (for example: ones with ADHD) require a token economy system that is more powerful, more frequent, and more linked in time to the desired behavior than do their non-ADHD peers. Some example behaviors that could be rewarded are getting homework done in a timely manner and getting ready for school on their own.

Long ago, professionals were interested in education to strengthen the relationship between students’ reinforcement and their academic achievement. One of the first uses of token economy was academic achievement for mentally retarded students that needed a comprehensive system designed for timing, use of continuous and appropriate related behavior because the chips should be easily accessible, can dispense and are related to try and make visible progress (Lieberman, 2000).

Bafile (2005) introduced many studies have shown that when classroom management is a struggle, using some form of token economy can bring the toughest class back into line. Hardman et al. (2007) studied 27 subjects with mental retardation and used chips which were interchangeable with candy, whistle or trinket. They found that this method had prominent effects on the academic skills of these students. Abarquhie’s research in 1998 to determine the effectiveness of token reinforcement to reduce educational failure and increase motivation in a group of 40 guidance school students (20 male and 20 female), indicated that using the method of token reinforcement in which the cards are given by delayed is more effective than lack of using this method (Mirzamani., Ashoori., & Sereshki, 2011). Haji Ali Mohammadi found in 1994 that the application of token reinforcements on academic achievements in social sciences was effective; also he found that token reinforcements will increase the academic achievement motivation of students who have problems in academic advancement (Mirzamani., Ashoori., & Sereshki, 2011).

A school wide approach to discipline that is focused proactive and consistent is more likely to be effective than the previous research in laboratory and classroom. Ideally, a school wide approach begins with conversations among teachers about ways to encourage positive behavior rather than punish misbehavior. The emphasis should be on discipline as a preventive measure intended to ensure the safety and sense of security of students and staff, and to create an environment conducive to learning. Hunter point out that “when the entire school staff is involved in determining and agreeing upon school wide expectations, policy and consequences, staff consistency and resulting student success are far more likely” (Protheroe, 2005).

Many researches indicated that school wide system influences strongly on the effect of behavior support (, 2005; , 2006; Scott., & Barrett, 2004; Simonsen., Britton., & Young, 2010).
III. Method

Participants

Three students with mental retardation participated in this study. All three students are attending The National Hanguk Seonjin Hakgyo, special school for mental retardation. Three Students were selected based on similar characteristics as possible. Three students couldn’t perform the intelligence test, K-WISC-III. Three students were diagnosed level 1 developmental disability by Korean diagnosis system of the eligibility for developmental disability. Three students’ vocabulary was extremely limited, had difficulty concentrating, get out of his seat at class, didn’t communication by speaking, didn’t respond to teacher correction, do not complete assignments and had similar behavior problems, shout out loudly, hit others.

Student One.

Student one was 13 years 6 months old. He had difficulties in learning attitude such as lack of interest on task, didn’t follow teacher’s direction, constantly squirms. He did not show verbal sign or gestures to interacting with teacher. He had challenge behavior such as lay down under desk, head banging, yell.

Student Two

Student two was 14 years 9 months old. He had difficulties in learning attitude such as lack of interest on task, didn’t follow teacher’s direction, threw things at the class. He did not show verbal sign or gestures to interacting with teacher. He had challenge behavior such as lay on the floor, disturb peers.

Student Three

Student three was 16 years 2months old. He had difficulties in learning attitude such as lack of interest on task, get out of his seats, didn’t follow teacher’s direction, He did not show verbal sign or gestures to interacting with teacher. He had challenging behavior such as rocking his body on the seat, lay on the floor, crying loudly.

Design

A descriptive, single-subject case study(A multiple baseline design across subjects) is used to document the effects of implementing SWTES on students.

Procedure

The following steps were to implement school wide token economy system. First, the researcher explained the purpose of research to home room teacher and teacher in charge of subject, and then selected the 3 students who have similar characteristics. Second, the researcher, home room teacher and teacher in charge of subject determined the measuring behaviors and defined them. They are as follows;
Learning attitude
- Sitting on his seat
- Interest on task
- Follow teacher’s direction
- Keeping attention

Social interaction
- Eye contact
- Gestures
- Smiling
- Vocalize with meaning
- Hold / draw clothes or arms for social function and/or communication

Challenge behavior
- Yell
- Crying
- Lay on the floor
- Disturb peers
- Hit others
- Head banging

Third, the two types of token economy, coupon and smiley badge were determined for the token economy reinforcement. Coupon will be exchanged to edible items in school store. Smiley badge can be get social reinforcement like praise and attention from school staffs.

Fourth, decide how to get the students take coupon and smiley badge.
- The students can get 500 won coupon whenever show the one of the measuring behaviors.
- The students can get smiley badge when show all three dependent behaviors during school hours. Of course, students also can get coupon at this time.

Fifth, the students were explained clearly when and why they get coupon and smiley badge and the exchange the token to edible items in the school store.

Sixth, The purpose of this research, the participants and the method of reinforcement for participants were explained to all school staffs. The main contents of explanation were the methods of reinforcement that teachers and school staffs praise students when meet the students with smiley badge.

Seventh, during intervention, home room and subject teacher post the details of the student’s behaviors that got smiley badge on message board in school home page. Then, school staffs to pay that student a compliment when meet the students.

Throughout this process, I, as researcher on this study, provided (a) additional support to the teachers during teacher’s meeting and (b) on-going co-researcher development to all school staff via weekly school meetings and in-vivo coaching.

Analysis

Visual analysis was used to examine change in the trend, level, and stability of the data within and across baseline and intervention phase. In single-subject methodology, visual analysis is the standard for examining the relationship between the independent and dependent (Simonsen, Britton and Young, 2010).

"If behavior is stable within conditions but change substantially and systematically between condition, then there is a good basis for attributing the changes to the manipulation of the independent variable" (Baron & Perone, 1998, p.49).
Timeline

November 2010 - Designed research and collect related articles.
February 2011 - Select students. Define target behavior. Explain the purpose and method of research to school staffs and informing them before research.
March 21 through June 10 - Implementation of research and data collection.
June 11 - Data analysis and results processing.

IV. Results

Results of school-wide token economy system are shown in table 1, 2 and figures 1 and 2. The results of the home room teacher's class are shown in table 1 and figure 1. The results of the subject teacher's class are shown in table 2 and figure 2.

Learning attitude

Results of learning attitude indicated that all three students improved to home room teachers and subject teachers. The effects of intervention were keeping at phase of maintain.

| Table 1. Frequencies to home room teachers |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|
| learning attitude             | Baseline     | Intervention   | Generalization | Maintain        |
| student 1                     | 10           | 38.2           | 42.4           | 45.3            |
| student 2                     | 10           | 35.1           | 43.6           | 40.7            |
| student 3                     | 8            | 33.3           | 46.8           | 40.7            |
| social interaction            |              |                |                |                 |
| student 1                     | 10.7         | 36.5           | 56             | 50.7            |
| student 2                     | 11           | 37.5           | 52             | 50.7            |
| student 3                     | 8            | 32.7           | 48.8           | 45.3            |
| challenging behavior          |              |                |                |                 |
| student 1                     | 65.3         | 46             | 32             | 34.7            |
| student 2                     | 62.7         | 45.3           | 35.2           | 36              |
| student 3                     | 63.1         | 45.6           | 35.6           | 36.7            |

| Table 2. Frequencies to subject teacher |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|
| learning attitude             | Baseline     | Intervention   | Generalization | Maintain        |
| student 1                     | 11.3          | 43.3           | 49.6           | 50.6            |
| student 2                     | 11.3          | 44.3           | 51.2           | 52              |
| student 3                     | 9.1           | 42.3           | 52.8           | 52.7            |
| social interaction            |              |                |                |                 |
| student 1                     | 10.7          | 42.5           | 61.6           | 57.3            |
| student 2                     | 10           | 48.2           | 66.4           | 64              |
| student 3                     | 10.7          | 51.6           | 63.2           | 56              |
| challenging behavior          |              |                |                |                 |
| student 1                     | 60           | 43.3           | 57.3           | 31.3            |
| student 2                     | 60           | 40.8           | 27.2           | 29.3            |
| student 3                     | 60           | 37.6           | 27.2           | 32              |
Frequencies to home room teachers

Student one responded with a mean of 11.3 % at the baseline phase, 43.3 % at the intervention phase, 50.6 % at the maintain phase. As we can see from the results, his learning attitude increased during the intervention period and keep this results in the maintain phase.

Student two responded with a mean of 11.3 % at the base line phase, 44.3 % at the intervention phase, 52 % at the maintain phase. As we can see from the results, his learning attitude increased during the intervention period and keep this results in the maintain phase.

Student three responded with a mean of 9.1 % at the base line phase, 42.3 % at the intervention phase, 52.7 % at the maintain phase. As we can see from the results, his learning attitude increased during the intervention period and keep this results in the maintain phase.

Frequencies to teachers in charge of subject.

Student one responded with a mean of 10 % at the base line phase, 38.2 % at the intervention phase 45.3 % at the maintain phase, As we can see from the results, his learning attitude increased during the intervention period and keep this results in the maintain phase.

Student two responded with a mean of 10 % at the base line phase, 35.1 % at the intervention phase, 40.7 % at the maintain phase. As we can see from the results, his learning attitude increased during the intervention period and keep this results in the maintain phase.

Student three responded with a mean of 8 % at the base line phase, 33.3 % at the intervention phase, 40.7 % at the maintain phase. As we can see from the results, his learning attitude increased during the intervention period and keep this results in the maintain phase.

Social interaction

All three students showed improvement on social interaction with their home room and subject teachers. The effects of intervention were keeping at phase of maintain.

Frequencies to home room teachers

Student one responded with a mean of 10.7 % at the base line phase, 42.5 % at the intervention phase, 57.3 % at the maintain phase on the social interaction with teacher in the class of home room teacher. His social interaction with teacher increased during the intervention period and keep effects in the maintain phase.

Student two responded with a mean of 10 % at the base line phase, 48.2 % at the intervention phase, 64 % at the maintain phase. His social interaction with teacher increased during the intervention period and keep effects in the maintain phase.
Figure 1.
Behavior changes through class of the home room teachers

- ● learning attitude
- ■ Social interaction
- ▲ Challenge behavior

Frequency

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Figure 2.
Behavior changes through class of the subject teachers

- ★ learning attitude
- ■ Social interaction
- ▲ Challenge behavior

Legend:
- B: Behavior
- I: Interaction
- G: Growth
- M: Maturity

Data points for S1, S2, and S3 are shown.
Student three responded with a mean of 10.7 % at the baseline phase, 51.6 % at the intervention phase, 56 % at the maintain phase. His social interaction with teacher increased during the intervention period and keep effects in the maintain phase.

**Frequencies to teachers in charge of subject.**

Student one responded with a mean of 10.7 % at the baseline phase, 36.5 % at the intervention phase, 50.7 % at the maintain phase. His social interaction with teacher increased during the intervention period and keep effects in the maintain phase.

Student two responded with a mean of 11 % at the baseline phase, 37.5 % at the intervention phase, 50.7 % at the maintain phase. His social interaction with teacher increased during the intervention period and keep effects in the maintain phase.

Student three responded with a mean of 8 % at the baseline phase, 32.7 % at the intervention phase, 45.3 % at the maintain phase. His social interaction with teacher increased during the intervention period and keep effects in the maintain phase.

**Challenge behavior**

Challenge behaviors of three students were decreased over the intervention. The effects of intervention were keeping at phase of maintain.

**Frequencies to home room teachers**

Student one responded with a mean of 60 % at the baseline phase, 43.3 % at the intervention phase, 31.3 % at the maintain phase. His challenging behaviors decreased during the intervention period and keep effects in the maintain phase.

Student two responded with a mean of 60 % at the baseline phase, 40.8 % at the intervention phase, 29.3 % at the maintain phase. His challenge behaviors decreased during the intervention period and keep effects in the maintain phase.

Student three responded with a mean of 60 % at the baseline phase, 37.6 % at the intervention phase, 32 % at the maintain phase. His challenging behaviors decreased during the intervention period and keep effects in the maintain phase.

**Frequencies to teachers in charge of subject.**

Student one responded with a mean of 65.3 % at the baseline phase, 46 % at the intervention phase, 34.7 % at the maintain phase. His challenging behaviors decreased during the intervention period and keep effects in the maintain phase.

Student two responded with a mean of 62.7 % at the baseline phase, 45.3 % at the intervention phase, 36 % at the maintain phase. His challenging behaviors decreased during the intervention period and keep effects in the maintain phase.

Student three responded with a mean of 63.1% at the baseline phase, 45.6 % at the intervention phase, 36.7 %
at the maintain phase. His challenging behaviors decreased during the intervention period and keep effects in the maintain phase.

V. Discussion

This study was conducted to explores the effects of school-wide token economy system on behavior of three students with mental retardation who have difficulty in learning attitude, social interaction with teachers and behavior. Notably, there appeared positive effects on three dependant variables, all three students. In addition, data illustrate that changes to home room teacher are more improved than subject teacher. In the next sections, I discuss study results in my interpretation, potential implications for practice and limitation of the study.

Interpretation of study results

I would like to discuss this study based on results of research and observation during the course of study. As noted in the results section, three students showed positive changes at three dependent variables behaviors to home room and subject teachers.

The behaviors of three students were improved when they recognized the value of two tokens that get edible items in school store and praise from teachers.

I think the effects were more increased cause of prepared two kind of token reinforcement, coupon and smiley badge. Although the needs and effect of coupon gradually vanish away after exchange to edible items, teachers’ praise to smiley badge made students continuously get reinforcement.

Even though observational data, at beginning on intervention, all three students look like get reinforcement by the coupon for the exchange to cookies and juice but they showed much interested in smiley badge from middle of the intervention to get praise and attention from school staff.

Special phenomenon was observed that three students became more bright and positive reaction by teacher’s social reinforcement whom students like him/her.

Another phenomenon was observed that three students often came to me to boast smiley badge and showed their smiley badge to other school staffs. Other additional results were that these all participants showed better self-confidence, initiative on school activity than before.

Implication for Practice

SWTES is a proactive, school wide intervention that has been demonstrated to be effective in typical school settings (Porter, 2007). Thus, typical school and alternative schools should consider implementing SWTES to support their students, including students with very challenging behavior. Similarly, alternative schools should consider increasing their use of positive practices.
Limitations of the study

The limitations influence this study. This study did not employ an experimental design. The data are descriptive in nature and cannot be used to infer a cause and effect relationship between the intervention and the outcomes. Data were collected by the school throughout the period of the study. Therefore, measures of interrater reliability were not calculated. The fidelity of SWTES implementation was not documented by an outside evaluator.

There is a lack of research on school wide token economy system. This research on school wide token economy system is relatively new and there is not enough.

In that sense, I hope this study will contribute to the subsequently study of the school wide support system.

References


