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THE EFFECTIVENESS OF TOKEN ECONOMY IN IMPROVING CONCENTRATION AND REDUCING DISRUPTIVE BEHAVIOUR AMONG AUTISTIC STUDENTS

Doreen Tan Yeen*[1], Mohd Norazmi Nordin[1]

[1]Faculty of Education, Universiti Kebangsaan Malaysia,
43600 UKM Bangi, Selangor Darul Ehsan, Malaysia.

*Corresponding author: Doreen Tan Yeen (doreenty1112@hotmail.com)

ABSTRACT

Inattention refers to behaviors that disrupt the learning process due to a lack of focus on learning activities. This study was conducted to identify the efficacy of applying token economy to improve attention spans and manage disruptive behaviours in autistic students. This is a experimental research and uses A-B-A-B, where A denotes the baseline phase and B signifies the intervention phase, the study included an eight-year-old autistic girl and two nine-year-old autistic boys as participants. Data were collected for observation at the school for four weeks, which involved first baseline phase, first intervention phase, second baseline phase and second intervention phase. Data collection involved a four-week observation at the school, encompassing periods before, during, and after the intervention, and was presented in the form of a linear graph depicting the effectiveness of the token economy. The results of this study indicate that the use of token economy enhanced autistic students' motivation in paying attention and reduced behavior problems. Overall, this study shows token economy is a form of intervention which is effective in improving attention spans of autistic students. Disruptive behaviours may be reduced at the same time overcome by maintaining a consistent token economy with continuous reinforcement over an extended period, along with the full cooperation of parents and other teachers.

Keywords: token economy; concentration; behavior; autism

1. INTRODUCTION

Lack of focus and concentration for studying is often neglected and receives less attention in the fields of cognitive psychology and educational psychology. A child will not be able to study well without concentration. This ability is the basis for the skills necessary for planning and solving problems. According to Yahaya 2006, concentration is defined as focused attention on sensory or mental events. In the context of learning, pupils need to focus their attention and concentration on understanding lessons, completing assignments and facing tests (James, 1980). In addition, concentration helps pupils acquire self-skills that are essential for lifelong learning. These skills include the ability to plan time and resources, organize yourself, and maintain focus on learning goals. Pupils who are well versed in concentration will be able to manage their time well and take the initiative in their achievements (Nurdin et al, 2023).

Concentration and disruptive behavior are two concepts that are interconnected in the context of learning. The learning style of pupils with learning difficulties is different from that of typical pupils. They were found to be unable to understand and store information for too long due to poor concentration and memory. This will lead to disruptive behavior and this will upset other students who are studying and teachers who teach (Abang Tar, 2021). Disruptive behavior is often caused by the inability of pupils to maintain concentration on the task or activity at hand (Kivumbi et al, 2019). Lack of concentration or diversion can cause pupils to become agitated, bored, or uninterested in ongoing learning.

Emotional instability or cognitive difficulties can also affect concentration and potentially lead to disruptive behavior (Vijain Kumar & Abd Rahman, 2018). For example, students who experience anxiety, stress, or emotional conflict may have difficulty focusing their attention on learning. This can lead to disruptive behaviors in response to perceived discomfort or difficulties. Based on Che Mud, Md Sham and Mohd Ali (2021), children with autism experience disproportionate emotional problems. When children with autism are having difficulty controlling their emotions, you can see that they may be raging, screaming, crying, beating themselves or showing 'stimming' behaviours such as waving their hands, shaking their bodies, turning around, and even saying a word or sentence over and over again. They prefer to be in their own world and have difficulty understanding the feelings of others besides not liking to use eye signals. In addition, children with autism are also so inflexible that they have a rigid routine and it is difficult to adapt to any changes.

Therefore, there are a number of interventions that can be used in special education to change and eliminate negative behavior. One such intervention was the use of economic tokens among students with special needs. The use of economic tokens in education is not new and is generally used to change unwanted behavior (Yahya et al, 2016). Studies from Fiksdal (2014), Ahkam et al (2020), Ismail (2022) and Tan et al (2022) have shown that economic tokens are beneficial to increase students' concentration, excitement and interest.

The main components of this economic token consist of targeted behavior, reinforcement, and reward. In this approach, pupils are given tokens as a reward when they show the desired behavior or do something positive (Bouras, 2019). These tokens can be obtained by pupils in various ways, such as completing tasks well, actively engaging in learning, or showing politeness (Rohmaniar and Krisnani , 2016). Therefore, the objective of this study is to examine the use of economic tokens to improve the concentration and control of the behaviour of students with autism.

2. LITERATURE REVIEW

Special Education is a programme aimed at meeting the various needs of special students (Kauffman et al, 2018). The Special Education Division, Ministry of Education Malaysia is responsible for determining the management of special education programmes throughout the country. The World Health Organization (WHO) defines OKU as a person with long-term physical, mental, intellectual or sensory disabilities who when faced with various obstacles may not be able to fully and effectively engage in society (WHO, 2020).

According to the Special Education Databook 2023, there are 116,044 disabled people registered as special needs pupils (MBK) in Special Education Schools, Integration Special Education Programmes and Inclusive Education Programmes. Of these, a total of 97,494 disabled students were among the learning difficulties. The number is increasing year after year from 2018 (83,598), 2019 (88,419), 2020 (93,951), 2021 (98,236) and 2022 (88,118) to 2023. In the Special Education Databook 2023, 25,973 students were categorized as autism.

The Department of Social Welfare (2021) defines learning problems as brain intelligence that is not consistent with its biological age. Learning problems are considered neurological problems (Fletcher et al, 2018). It is related to how the brain receives, processes, analyzes and stores information. Learning problems are delirium in one or more of the psychological processes that involve understanding, the use of oral or written language. This disorder can affect the ability to hear, think, speak, read, write, spell or count (Kohli et al, 2018). Those who fall into the category of learning difficulties are students who are late in global development, down syndrome, Attention Deficit Hyperactivity Disorder (ADHD), autism, Specific Learning Disability and intellectual disability (Department of Social Welfare, 2016).

According to the American Psychological Association (APA) (2023), autism spectrum disorder (ASD) refers to neurodevelopmental disorders characterized by difficulties in communication and social interaction, patterns of behavior, interests as well as limited and repetitive activities. From a medical point of view, autism is a condition in which a person's social interaction is interrupted due to communication skills problems, repetitive inappropriate behavior, self-isolation and having a limited desire for something (MOH, 2020). The disorder of the autism spectrum can occur in all races, ethnicities and socioeconomic status (Lydia Pook et al, 2023).

The birth rate of children with autism is found to be increasing every year. According to statistics released by the World Health Organization (WHO) based on studies conducted by Zeidan et al (2022), there is one in 100 children in the world with autism (World Health Organisation, 2023). According to the Centers for Disease Control and Prevention (2022), an estimated 1 in 44 children in the United States meets the criteria for ASD. The National Association of Autism Malaysia (NASOM) (2023) reports that about 9,000 children in Malaysia are born with autism every year. The Ministry of Women, Family and Community Development (KPWKM, 2022), there has been an increase in the number of registrations of children with autism every year from 21,287 in 2018 to 36,601 as of 30 June 2022, a total of 24,748 individuals comprising children under the age of 12 (Mat Ruzki, 2022).

Children with autism are often associated with late cognitive development compared to children of age (Ridderinkhof et al, 2020). In addition, children with autism are children who have undergone diagnostic examination and have all three criteria, namely significant weaknesses in social interaction (Kałużna et al, 2018); weaknesses in communicating (Arnold et al, 2019); and stereotypical and repetitive patterns of movement, activity and favorites (Leyden et al, 2019). In addition, children with autism experience a disorder in providing concentration in learning sessions (Murray, 2010).

Concentration is the ability of a person to direct attention at will. Focus can be influenced by interest in things through focus and determination over a period of time (Sasson, 2021). According to Nurdin, Mohd Ramli and Mohd Shahar (2023), the focus is very important in helping to enhance other skills needed by an individual whether an employee or a student. For example, a student's concentration skills can help improve their 3M skills, which are reading, writing and counting skills. In addition, this concentration skill is also linked to perception that plays an important role in the development of concentration skills as it will affect the individual's view of the stimuli that exist around them (Nash et al, 2016). Therefore, the focus or focus in the classroom is an important element to ensure the level of understanding of the students with the teaching conducted by the teacher.

Concentration and disruptive behavior are two concepts that are interconnected in the context of learning. Lack of concentration or diversion can cause pupils to become agitated, bored, or uninterested in ongoing learning (Kivumbi et al, 2019). As a result, they may begin to engage in disruptive behavior to seek attention or fill their attention vacuum. The existence of a short concentration problem exhibited by students with autism has to some extent disrupted the smooth process of teaching and learning in the classroom. The emotional instability or cognitive difficulties exhibited by students with autism can also affect concentration and potentially lead to disruptive behaviors (Vijain Kumar & Abd Rahman, 2018).

Teachers should use a system of management of problematic behavior by monitoring and evaluating problematic behavior in their classrooms. The purpose of the behaviour modification technique is to apply reinforcement rewards (gifts/fines) to reduce or eliminate problematic behaviours or teach pupils new responses (Vijayalakshmi, 2019). Behavior modification is an approach used to change and improve behavior using techniques to change behavior and stimulus response through positive or negative reinforcement of behaviors that do not require change and reduce unwanted behaviors such as playing objects, speaking while the teacher is teaching through elimination or fines (Rafiqah et al, 2021). In this study, intervention programmes based on the concept of behavior modification depended largely on the principles of operant prevalence where behavior changes to an unexpected performance. For example, an individual will be given a token that is the value that needs to be collected when exhibiting the behavior that has been set for modification.

Economic tokens are an intensive positive refrain to build and maintain performance and appropriate behavior carried out in the classroom (Samburgo, 2017). Studies state that in order to provide a reward system based on token collection in promoting positive behavior teachers can use charts to stick stars (Rafiqah et al, 2023), scores (Hudachek, 2021), tickets (Gomez et al., 2020) to enable token collection to be made. This token will be given to the pupil when showing the desired behavior and converting the available token into a gift or service based on the set reward value (Hackenberg, 2018). In the field of education, giving compliments and prizes is one of the modification tools that should be used to participants or children to improve and strengthen behavior to be more positive (Austin, 2022: Aisha Rafi et al, 2020). The use of economic tokens can encourage children's motivation to engage in activities carried out by teachers (Shelley, 2021). The token system has been a motivational and behavioural management tool in an educational and rehabilitation environment since the beginning of 1800 (Hackenberg, 2009).

In the Yu study (2018), the use of economic tokens had a positive effect on the learning of Malay language pupils in terms of achievement, motivation and involvement in learning. In addition, a fun learning environment can be created with the use of economic tokens as the confidence of pupils can be built by engaging in learning activities (Ismail, 2022). Furthermore, teachers can give tokens to students to use for remuneration. Indirectly such tokens can motivate children (Harris, 2019).

To date, the use of economic tokens is still relevant as this strategy is easily implemented in schools especially in the Integration Special Education Programme (PPKI) in motivating students to behave positively by overcoming and controlling negative behaviour directly. This is evident based on the results of previous studies in modifying the behaviour of students who are too quiet (passive) as well as forming positive behaviors (Jahari et al, 2016). In addition, Katman's study (2016) showed that class control can be improved by applying economic token methods and this has increased students' interest in sluggish or slow learner interest in teaching and learning conducted in the classroom and even had a positive impact. To ensure that pupils can behave better and positively on an ongoing basis, rewards as a motivation should be given to pupils. Yahyaa (2016) effective use of economic tokens to address the behavioral problems of ADHD pupils who regularly drink bicarbonate water drinks. While Shifatul (2020) and Hidayat (2021) proved that the use of economic tokens is effective in reducing hyperactive behavior in ADHD pupils. This is manifested when ADHD pupils can sit quietly while performing tasks, not run around there, and be able to focus on completing the tasks given by the teacher.

In conclusion, the use of token systems in education today is very prevalent, especially increasing the desired behavior and reducing unwanted behavior so as to ensure that learning in the classroom can run smoothly.

3. METHODOLOGY

This study is experimental and uses A-B-A-B (reversal design) methods to examine the effectiveness of economic tokens on increased concentration and control behaviour among students with autism. According to Prahmana (2014), the design of a single subject is extremely advantageous in performing behavioral alteration analysis. In addition, one of the most important benefits of the design of this single subject is that it does not require a large group of participants (Byiers et al, 2012).

According to Virués-ortega (2010), A-B-A-B is an analysis of behavior in experimental studies for the purpose of improving, reducing or maintaining human behavior. The study was conducted over four weeks i.e. the first week is the baseline phase, the second week is the intervention phase, the third week is the second baseline phase and followed by the fourth week which is the second intervention phase.

The sample is the respondents of the study who were selected to represent a population.. According to Martínez-Mesa et al (2016), the sample selection criteria of the study must involve a lot of information and relate to the field to be studied. In this study, researchers selected an eight-year-old female student with autism and two nine-year-old male students with autism as a sample of the

study. The sample was a special needs student in a primary school in Serian district, Sarawak. Observations for respondents are carried out to select samples of studies. The researchers consulted the students' Individual Education Plan (RPI) and discussed the class teacher's work on the disruptive behaviour that the study sample often performs during the teaching and learning sessions in progress. The sample of the studies selected was based on a number of criteria, namely, children diagnosed with autism, showing problematic behaviours such as often running out of class, tantrums if asked to write or read and messing with friends next door. They also have less concentration characteristics such as frequent daydreaming, tantrums, not being able to sit still and focusing on the teacher's teaching for less than 5 minutes.

The main instrument used in this study is data collection. The researcher will observe and focus on specific behaviors while conducting structured observations. In addition, observation forms as instruments have been used to record the behaviour of students with autism during learning sessions conducted in or out of the classroom and to collaborate with other subject teachers according to the teaching and learning timetable. The observation form used in this study, namely, the interval recording data sheet is adapted from the Xin, Sheppard and Brown (2017) studies.

Observation of the behaviour of three identified autism pupils was carried out before the intervention, during the intervention and after the intervention. Observations are carried out for 30 minutes and three lessons will be conducted at each phase. The results of the observations are recorded in the observation form entitled Frequency Data Form based on the frequency of behavioural problems seen by the pupils. Data obtained through observations were collected and analysed to see the effectiveness of economic tokens as an intervention in improving concentration and controlling the behaviour of pupils with autism. The data recorded in the Frequency Data Form is analyzed in the form of a table.

3.1. Observation

Based on the observational and evaluation data obtained, the researchers analyzed the data to see the extent of economic token success as a method of intervention to improve concentration and control the behaviour of students with autism.

Table 1: Data Table of Sample 1's Attention in the Class

Sample 1's Attention in the Class							
First Baseline		**First Intervention**		**Second Baseline**		**Second Intervention**	
Lesson	**Total**	**Lesson**	**Total**	**Lesson**	**Total**	**Lesson**	**Total**
I	1	I	1	I	1	I	1
II	1	II	2	II	1	II	1
III	0	III	1	III	1	III	2

Table 2: Data Table of Sample 2's Attention in the Class

Sample 2's Attention in the Class			
First Baseline	**First Intervention**	**Second Baseline**	**Second Intervention**

Lesson	Total	Lesson	Total	Lesson	Total	Lesson	Total
I	1	I	2	I	2	I	4
II	2	II	2	II	2	II	3
III	2	III	3	III	2	III	3

Table 3: Data Table of Sample 3's Attention in the Class

Sample 3's Attention in the Class							
First Baseline		First Intervention		Second Baseline		Second Intervention	
Lesson	Total	Lesson	Total	Lesson	Total	Lesson	Total
I	2	I	3	I	3	I	4
II	2	II	3	II	2	II	5
III	1	III	3	III	2	III	4

Tables 1, 2 and 3 show the results of the analysis conducted on the sample studies. For the first baseline i.e. the observation of the concentration of students without intervention in all three lessons, the sample 1 obtained only 2 times, the sample 2 and the sample 3 obtained 5 times. In this phase, the researchers can see the focus of the students in the real atmosphere that occurs during the teaching and learning process without any stimulation.

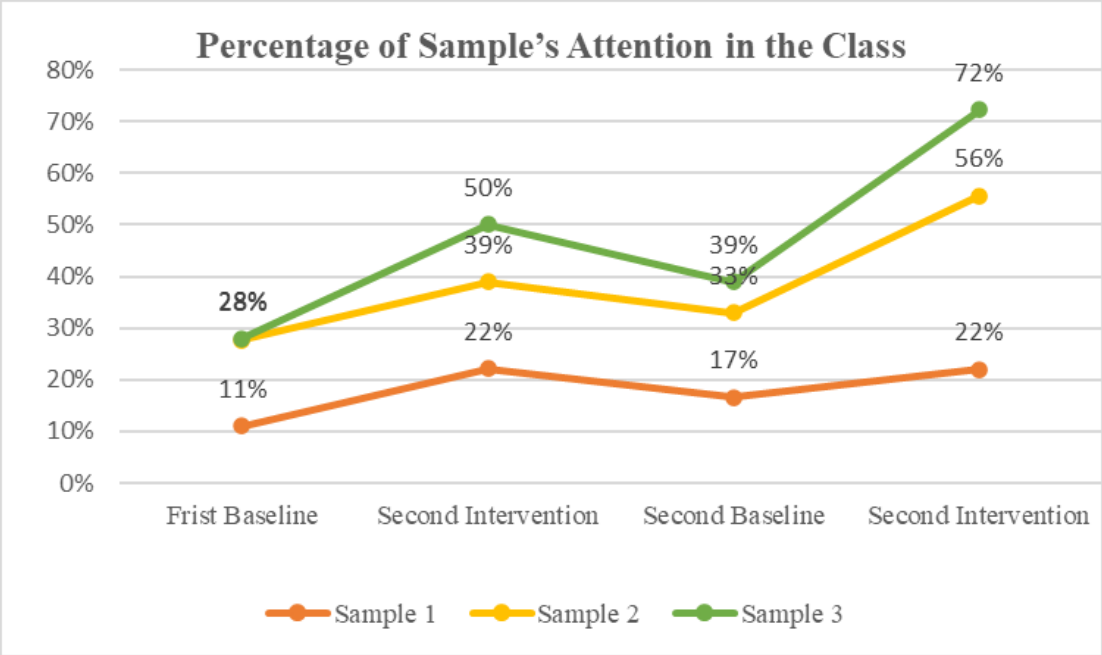
While the first intervention phase showed the results of the analysis when pupils were exposed to 'economic token' interventions throughout the teaching and learning sessions. There was a modification of the behavior that occurred compared to the first baseline phase i.e. the sample 1 obtained 4 times, the sample 2 obtained 7 times and the sample exhibited a frequency of focusing 9 times throughout the observation. Researchers have promised pupils that if they do not do prohibited things (disruptive behaviour), researchers will give stars (tokens) to pupils. In addition, the researchers also use commendation techniques when the students focus on the teacher's teaching such as answering the teacher's questions, completing assignments and others. Despite the increase, the value is still low and worrying. This is because students with autism are not yet able to receive the intervention given properly. This situation can make it clear that pupils with autism also need space and time to accept any changes in their daily lives. It can be concluded that there are behavioural changes exhibited by pupils with autism after the 'economic token' intervention was introduced.

For the third phase, the intervention withdrawal phase (second baseline) showed more encouraging results than the first Baseline phase . In this phase there was an increase in pupils focusing when sample 1 obtained 3 times, sample 2 6 times and last sample 3 7 times. Therefore, the motivation of students to continue to behave well i.e. focus on teacher teaching and active self-involvement has been affected by attracting economic token intervention in the PdP process.

Finally, in the final phase, researchers have re-implemented the 'economic token' intervention method for students with autism. The frequency with which pupils focus is increasing. Sample 1 obtained 4 times, sample 2 10 times and last sample 3 13 times. In this phase, the students have converted the tokens received into gifts they like. This second phase of intervention obtained the

most frequency with which pupils focused. Through these interventions, pupils become more motivated to focus on teacher teaching.

Figure 1: Percentage of Sample's Attention in the Class



Based on Figure 1, in the first baseline phase the concentration of samples 1, 2 and 3 is at low and horizontal levels of around 10 percent (%) and below 30 percent (%). An increase of up to 10% to 22% was shown in the first intervention phase when the intervention was introduced with a record concentration of 22%, 39% and 50%. However, the percentage of concentration was not maintained when the intervention was withdrawn. The focus force data on the second baseline phase showed a reduction of more than 5% to 11% when sample 1 gave only 17% concentration, sample 2 gave 33% focus and sample 3 gave 39%. In the fourth phase of the second intervention phase, there was an increase in the percentage of concentration recorded when the economic token intervention was introduced again. In this phase, sample 1 has given 22% focus, sample 2 has given 56% focus and sample 3 can pay attention up to 72% compared to below 39% during the previous baseline phase. Overall, with the use of economic tokens, all three study samples felt happy and more interested in taking classes . Thus, students' self-confidence can be formed and students' self-motivation increases when pupils are rewarded for their efforts (Ismail, 2022).

4. DISCUSSION

This study found that the use of economic token interventions was beneficial in improving sample concentration during intervention conditions. Short pupil concentration problems make it difficult for teachers while teaching and learning sessions are underway (Lai & Chang, 2020). Autism is a lifelong neurodevelopmental disorder that usually appears in early childhood and affects a person's social, communication, relationship, and self-regulation skills. In fact, the existence of a short concentration on display by students with autism to some extent interferes with the smooth running

of teaching and learning activities (Tar et al, 2021). This disorder is likely to lead to a dropout in learning that occurs in a handful of learning-impaired pupils. Short concentration problems of pupils will lead to the occurrence of disruptive behavioural problems. Therefore, special education teachers should establish an orderly classroom management system to help students with autism. In this study, the researchers used Skinner's modification strategy which involved the use of economic tokens in improving pupils' concentration and reducing the disruptive behaviour of autism pupils while teaching and learning sessions were underway.

Based on the research findings, the use of economic tokens successfully increases concentration and reduces the disruptive behaviour of students with autism during learning at the current level. This shows that economic tokens are one of the approaches that can have an impact and motivation for students with autism if they are implemented in accordance with the problems they want to solve. Therefore, it is not wrong for a teacher to use this method as a solution to a negative attitude. The use of economic token interventions has the potential to be effectively used in teaching and learning in the classroom taking into account the factors pupils focus on. This factor has contributed to the development of behavior such as concentrating, obeying instructions, preparing training as described by Erwiza et al (2019). This is because, the ability of students to focus is an important basic skill that can help with excellence and development at the school level. If the lack of attention to the problem leads to an increase in behavioral problems. The failure of students with autism in mastering these basic skills causes the process of development of an individual to be disturbed. This disorder occurs due to the failure to link the experience of learning basic sewing skills with the daily life and employment of pupils (Bassett, 2017).

The findings of this study further strengthen the concept of operant laziman, Zone of Proximal Development (ZPD) concept and ecological concept when the use of economic tokens has the potential to reduce disruptive behavioural problems as students with autism focus on teaching teachers during the teaching and learning process. Although significant changes occurred at the intervention stage, insignificant findings may also strengthen knowledge of the concept of intervention when the combination of theories can have an impact on behavioural changes in the short term. In fact, the concepts set out in each theory give importance in adding knowledge to guide the behaviour of students with learning problems in a conducive classroom environment and controlled management.

Based on the findings of this research, there are several recommendations that can be used as a guide to other researchers who wish to continue or conduct studies related to intervention programmes based on the use of economic tokens. The researcher's recommendation for future studies is to examine the types of behavioural problems exhibited by pupils with learning difficulties. In addition, if the intervention is carried out continuously over a long period of time the behaviour exhibited by students with autism will be more positive. This can give students with autism a fun learning as the learning process takes place smoothly.

This study as a whole contributed to the change in the concentration of autism pupils where students with autism were introduced with rewards that could attract them to pay more attention during the teaching and learning process. Indirectly the behaviour of students with autism can be improved over time. Pupils with autism are also seen to start following and obeying the teacher's

instructions. This study contributes to teachers of special education in the aspect of innovation and creativity in teaching and learning methods. The economic token intervention method can not only increase the concentration of students with learning difficulties and reduce behavioural problems that interfere with the teaching and learning process, but also improve the academic achievement of students with autism. This method is indirectly seen to further smooth the duties of a special education teacher in the control of the classroom.

The contribution from this study can have implications in the field of special education as the results of these findings provide knowledge that the ability of pupils to focus is an important skill and is closely related to behavioural problems. However, the use of economic tokens needs to continue over a long period of time in order to obtain significant results.

5. CONCLUSION

After conducting this experimental study, the researchers found that the short concentration problems of students with autism can be reduced and this study has also contributed to the process of improving teaching and learning in the classroom. Early interventions can reduce disruption during teaching and learning activities and improve the academic achievement of pupils with autism. Overall, if the problem of short concentration of students with autism is not addressed using effective methods, disruptive behavior will occur in the classroom. The consequences of such actions have created a less conducive teaching and learning environment. This causes the social and emotional development of students with autism to be disrupted. Therefore, the intervention programmes conducted in schools have shown a positive effect on changes in concentration and disruptive behaviour of students with autism in the classroom. The results of the study also showed that the praise and reward strategy is an appropriate strategy to make the recovery process to the behavior that it wants to change. The implications of this intervention programme show joy to students with autism who focus more on learning.

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