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Research Paper

# The Effectiveness of Smart ABA (Smart Applied Behavior Analysis) in Teaching Children with ASD (Autism Spectrum Disorder) Reading the Arabic Alphabet

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**Abstract**

Reading the Qur'an is an obligation for all Muslims without exception, starting with reading the Arabic Alphabet. However, it is a difficult skill in children with Autism Spectrum Disorder (ASD). Currently, there is no systematic, structured, and measurable teaching system for these skills for ASD children/individuals. This study aims to produce an effective and efficient way for ASD children/individuals to read the Arabic alphabet. This study implements the development of reading teaching using Smart ABA. This study used Single Subject Research. The subjects were five ASD children aged 2.8 to 7.19 years who underwent Smart ABA therapy at the KID ABA Autism Center Indonesia. Therapists had been competent as Smart ABA therapists through training and internship in tiered and gradual stages. Data analysis used graphic visual analysis. The results of this study showed that all subjects managed to master the ability to read 30 Arabic alphabets in 68.1 + 19.24 days (6.81 + 1.92 weeks). Smart ABA effectively and efficiently taught ASD children to read the Arabic alphabet. The results of this research can be applied worldwide by following the Smart ABA SOP.

**Keywords** *Autism, Smart ABA, Reading Arabic Alphabet, Reading Qur'an, ASD*

## INTRODUCTION

Reading and understanding the Qur'an as a guide in daily life is essential for all Muslims. According to Izzan et al. (2022), all Muslims must read the Qur'an and its rules (Misbah, 2019). Reading the Qur'an starts with reading the Arabic alphabet, but in children with autism spectrum disorder (ASD), this is a difficult skill. Mihaylova et al. (2022), in their research, said that children with ASD experience many difficulties related to verbal ability and reduced reading skills. There are currently no systematic, structured, and measurable teaching methods for these skills for ASD children/individuals.

Many teach ASD children/individuals to read the Arabic alphabet without knowing and seeing the problems of Autism and how to teach it correctly, as well as the stages in teaching ASD children/individuals to read the Arabic alphabet, as in research conducted by Soleha et al. (2022), Anjarwati (2020), and Azzahid et al. (2022).

In the research of Borman et al. (2018), electronic media such as games and audio-visuals from gadgets are used to teach reading the Arabic alphabet, while children/individuals with ASD should avoid audio-visuals produced by loudspeakers and screens because of the adverse effects. Exposure to gadgets can have adverse effects on ASD (Putra & Aziz, 2022). These things are big problems for children/individuals with ASD, and a solution must be found.

This study aims to teach ASD children/individuals to read the Arabic alphabet using Smart ABA, which is systematic, structured, measurable, effective, and efficient. The research in this paper

is the first to report teaching children/individuals with ASD using Smart ABA to read the Arabic alphabet.

## LITERATURE REVIEW

Reading the Arabic alphabet is essential for children to be able to read the Qur'an. In children/individuals with ASD in Indonesia, it is carried out after they can read letters and sentences in Indonesian. Smart Applied Behavior Analysis (Smart ABA) is an applied science/method that uses behavior modification procedures to teach someone (in this case, children/individuals with ASD) to master various abilities/activities based on the values/standards existing in society by breaking down various complex activities into small parts, which are then taught/trained intensively, systematically, structured, and measurable (Anwar et al., 2022).

Autism is a severe neurobiological developmental disorder that occurs in children, causing problems in communicating and relating to the environment, starting in the first three years of life and continuing throughout life if not intervened (Sutadi et al., 2018). Autism is a developmental disorder with symptoms including problems in communication and social interaction, as well as a lack of interest and repetitive behaviour (American Psychiatric Association, 2013). Experimental research design with single-subject research (SSR) is used to observe behaviour and evaluate an intervention/treatment on subjects (Indra, 2021).

## RESEARCH METHOD

This experimental research design is single-subject research (SSR), used to observe behaviour and evaluate an intervention/treatment on subjects (Indra, 2021). SSR is commonly used in research on the education of special needs students (Cakiroglu, 2012). In this study, the intervention of subjects used Smart ABA. The research subjects were five ASD children who underwent therapy using the Smart ABA method at the KID-ABA Autism Center Indonesia. All parents of the Subject provided informed consent. Ethical clearance was obtained from Universitas Muslim Indonesia (No: 605/A.1). Data collection instruments used direct observation and documentation (written, photographs, and videos). Data analysis used graphic visual analysis to interpret the effects of experimental research (Indra, 2021).

## FINDINGS AND DISCUSSION

Due to the limited number of words (maximum 2,000), this proceeding does not discuss individual results, nor the stages of Smart DTT and Smart DT and their definitions in detail. In Figure 1., Subjects A and D initially require a small number of sessions, then fewer in the Second Block, and so on, only taking 3 sessions to reach the Passing Criteria.

Subject B initially also required a relatively small number of sessions and then experienced an acceleration to reach the Passing Criteria in the Second Block, but then there was a spike in the number of sessions to complete block-to-block, although, in the Sixth Block, the Subject experienced an increase in ability (graph decreased). Subjects C and E showed similar but somewhat higher results, and then the number of sessions fluctuated to reach the Passing Criteria up to the Sixth Block. Figure 2 shows the mean value of the result shown in Figure 1, with a horizontal regression line and $R^2$ 0.02.
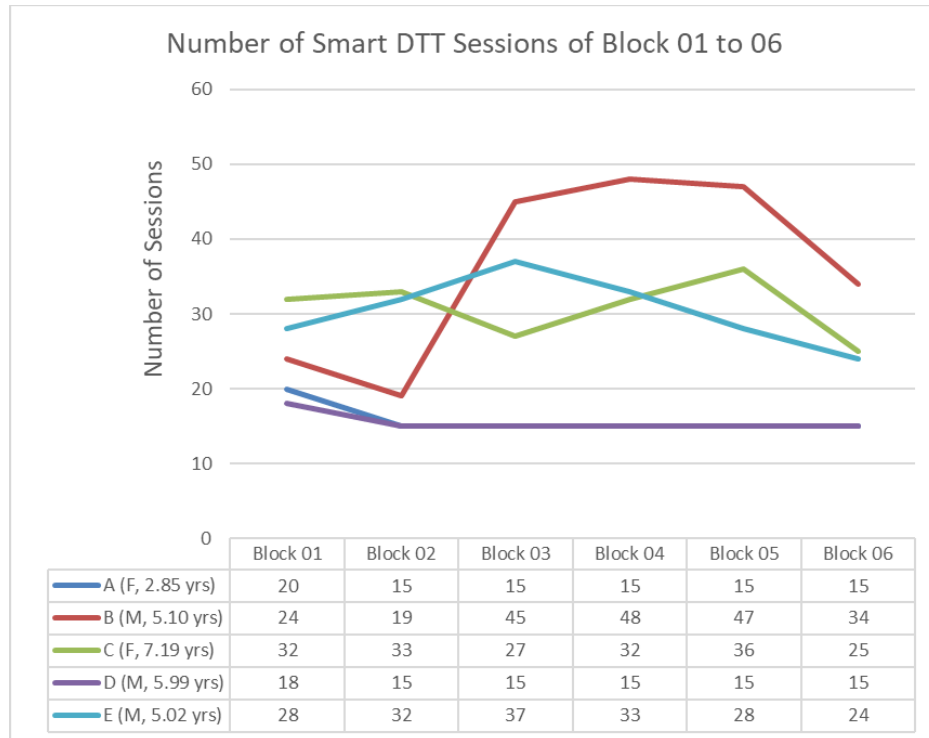
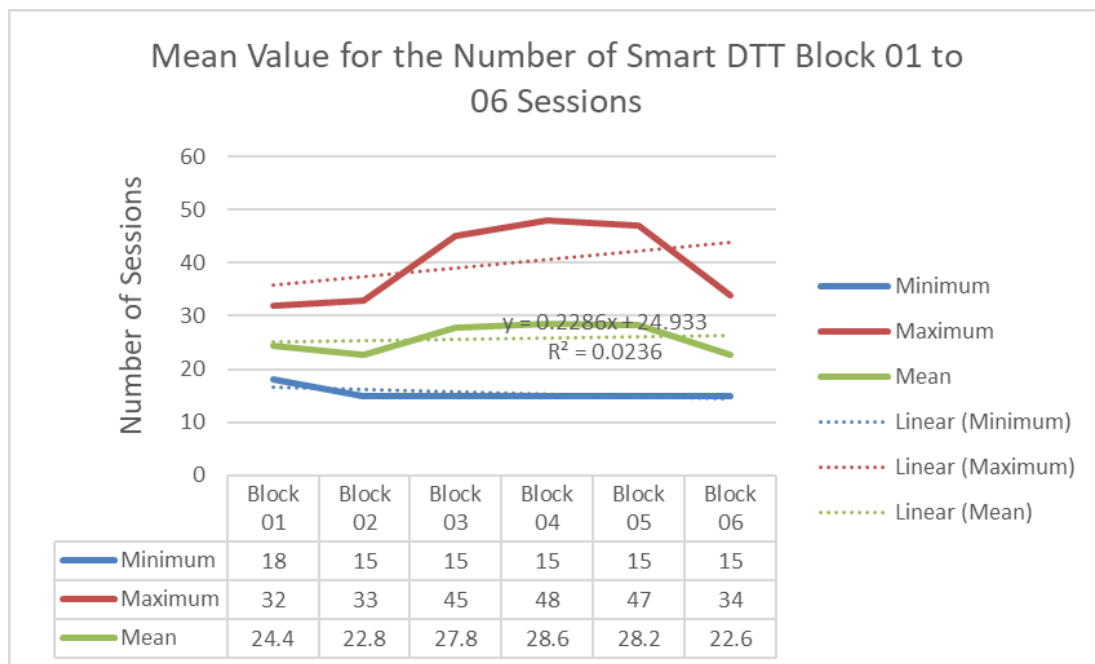**Figure 1.** Number of Smart DTT Sessions Block 01 to Block 06

The chart "Number of Smart DTT Sessions of Block 01 to 06" shows Number of Sessions (y-axis, 0 to 60) against Blocks 01 to 06:

| | Block 01 | Block 02 | Block 03 | Block 04 | Block 05 | Block 06 |
|---|---|---|---|---|---|---|
| A (F, 2.85 yrs) | 20 | 15 | 15 | 15 | 15 | 15 |
| B (M, 5.10 yrs) | 24 | 19 | 45 | 48 | 47 | 34 |
| C (F, 7.19 yrs) | 32 | 33 | 27 | 32 | 36 | 25 |
| D (M, 5.99 yrs) | 18 | 15 | 15 | 15 | 15 | 15 |
| E (M, 5.02 yrs) | 28 | 32 | 37 | 33 | 28 | 24 |



**Figure 2.** The mean value for the number of Smart DTT Block 01 to 06 sessions

The chart "Mean Value for the Number of Smart DTT Block 01 to 06 Sessions" shows Number of Sessions (y-axis, 0 to 60) with trendline $y = 0.2286x + 24.933$, $R^2 = 0.0236$:

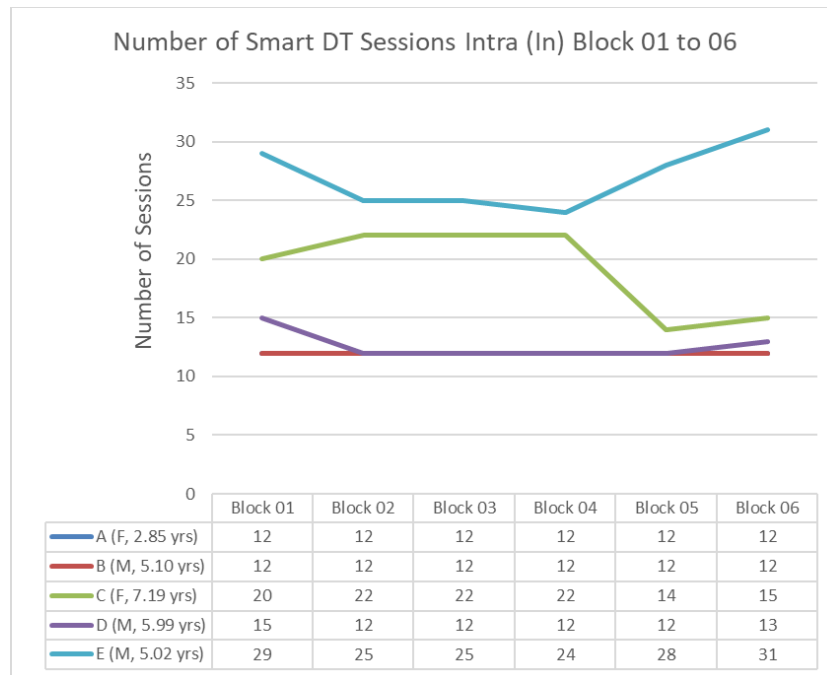| | Block 01 | Block 02 | Block 03 | Block 04 | Block 05 | Block 06 |
|---|---|---|---|---|---|---|
| Minimum | 18 | 15 | 15 | 15 | 15 | 15 |
| Maximum | 32 | 33 | 45 | 48 | 47 | 34 |
| Mean | 24.4 | 22.8 | 27.8 | 28.6 | 28.2 | 22.6 |

**Figure 3.** Number of Smart DT Sessions Intra (In) Block 01 to 06

In Figure 3., Subject B required quite a few sessions to achieve the Passing Criteria on Smart DTT (see Figure 1.), but on Smart DT, from Block to Block, it was excellent; it only required three sessions per Activity in the Smart DT unit to achieve the Passing Criteria. Subject D is similar to Subject B, only slightly different in the First and Sixth Blocks.

In Subject C, the number of sessions required in the First Block is higher, and in Subject E, it is even higher. However, in the Second Block, Subject C required a more significant number of sessions, while Subject E experienced a decrease. After that, it was relatively flat from the Second to the Fifth Block. However, in the Fifth Block in Subject C, the number of sessions required decreased significantly and increased slightly in the Sixth Block, while in Subject E, it increased in the Fifth Block and increased again in the Sixth Block.
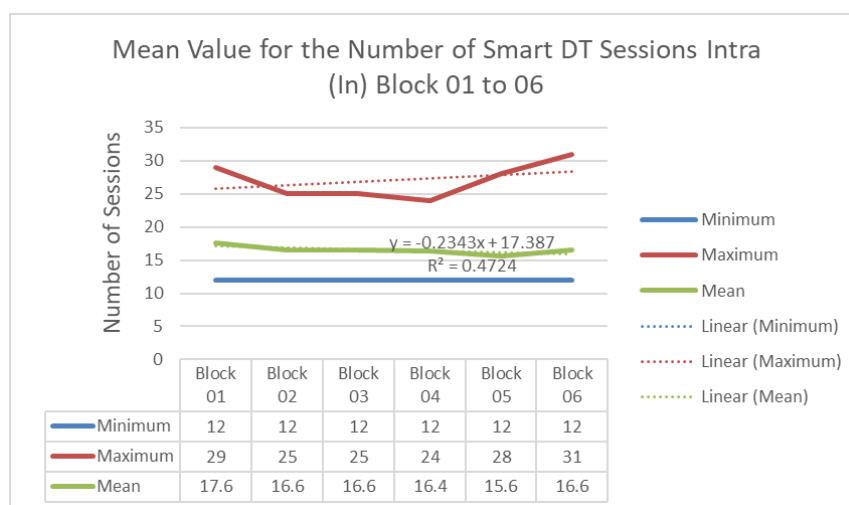


**Figure 4.** Mean Value for the Number of Smart DT Sessions Intra (In) Block 01 to 06

Figure 4. shows that the simple linear regression line at the mean value tends to decrease slightly, with $R^2$ 0.4.
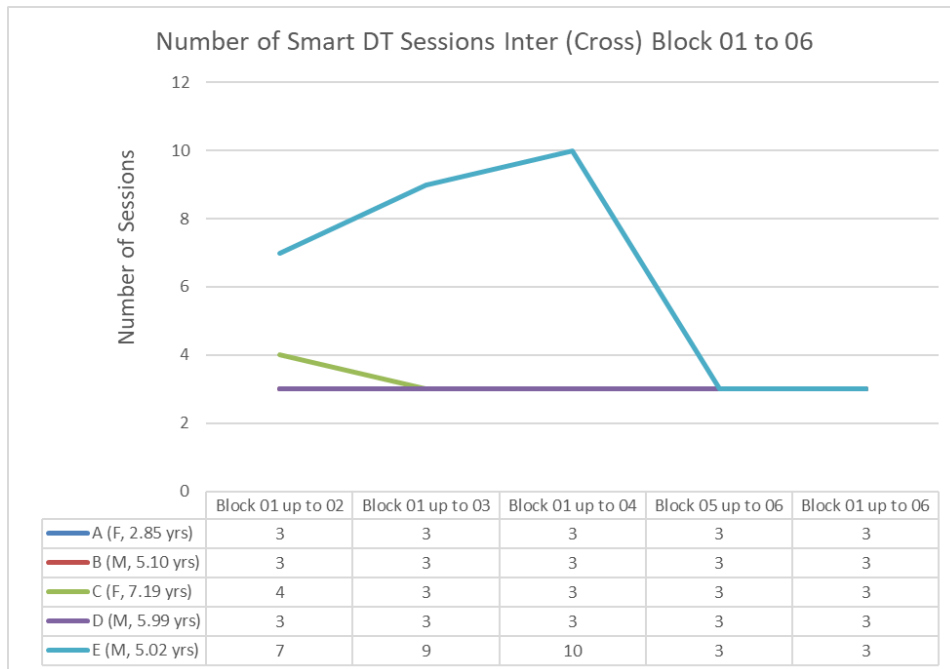


**Figure 5.** Number of Smart DT Sessions Inter (Cross) Block 01 to 06

Figure 5. shows that most Subjects (A, B, C, and D) quickly reached the Passing Criteria. In contrast, 1 Subject (E) needed more sessions to reach the Passing Criteria, increasing to the Third Block Unit but decreasing to a minimum of 3 sessions in the Fourth and Fifth Block Units.
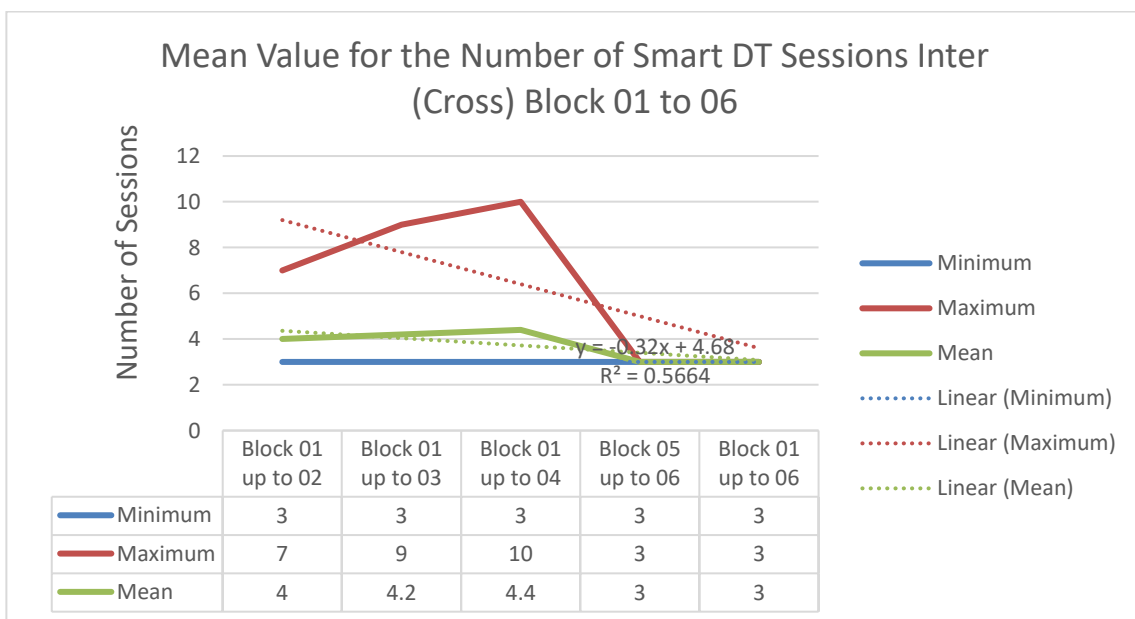


**Figure 6.** Mean Value for the Number of Smart DT Sessions Inter (Cross) Block 01 to 06

Figure 6 illustrates the mean value of Figure 5, where the regression linear line appears to be decreasing, with $R^2$ of 0.5.

**Table 1.** Total Number of Sessions Smart DTT, Smart DT Inter, Smart DTT+DT Intra, Smart DTT+DT Intra & Inter (Total Number of Sessions)

| SUBJECT | DTT | DT Intra | DT Inter | DTT + (DT Intra) | DTT + (DT Intra & Inter) | Days | Weeks |
|---|---|---|---|---|---|---|---|
| A (F, 2.85 yrs) | 95 | 72 | 15 | 167 | 182 | 45.50 | 5.69 |
| B (M, 5.10 yrs) | 217 | 72 | 15 | 289 | 304 | 76.00 | 7.60 |
| C (F, 7.19 yrs) | 185 | 115 | 16 | 300 | 316 | 79.00 | 7.90 |
| D (M, 5.99 yrs) | 93 | 76 | 15 | 169 | 184 | 46.00 | 4.60 |
| E (M, 5.02 yrs) | 182 | 162 | 32 | 344 | 376 | 94.00 | 9.40 |
| Minimum | 93 | 72 | 15 | 167 | 182 | 45.50 | 4.55 |
| Maximum | 217 | 162 | 32 | 344 | 376 | 94.00 | 9.40 |
| Mean | 154.40 | 99.40 | 18.60 | 253.80 | 272.40 | 68.10 | 6.81 |
| SD | 50.82 | 35.25 | 6.71 | 72.44 | 76.97 | 19.24 | 1.92 |

Table 1. shows the sessions required for the entire Smart DTT and Smart DT Program. The implementation of teaching sessions on Smart ABA was carried out with doses that depend on the age of ASD individuals. Lovaas (1987) recommended a therapeutic dose of at least 40 hours per week, regardless of the age of the ASD individual being treated using the ABA Method. But in Smart ABA, the dose of therapy depends on the age of the ASD individual when treated to catch up with his peer group quickly. Namely for ages less than 3 years with a dose of 26 sessions (= 39 hours) per week, ages 3-5 years 32 sessions (= 48 hours) per week, and ages over 5 years 40 sessions (= 60 hours) per week. So, teaching and training reading the Arabic alphabet in ASD children using Smart ABA required 272.4 + 76.97 sessions (= 68.1 + 19.24 days = 6.81 + 1.92 weeks).

**Discussion**

Studying Smart ABA for Autism thoroughly and then applying it to ASD children correctly and adequately is something that we must implement. The study revealed a new method of teaching ASD children/individuals to read the Arabic alphabet, which was developed through FGD (Focus Group Discussion) by the researchers as Director and Smart ABA Consultant, and also with the clinic supervisor and the KID-ABA Autism Center Indonesia therapist team.

This study differs from previous studies that did not describe the requirements for ASD children to start reading the Arabic alphabet and its implementation and effectiveness. Among others, the study of Arifah et al. (2023) in ASD who did not meet the requirements, such as tantrums, were taught to read the Arabic alphabet, then the teacher followed the children's wishes, which very incompatible with Smart ABA and ABA as the method used in the study, and it was not clear what the research results are. Other studies (Sulistya & Pamuji, 2016; Tamara, 2018) did not explain the teaching process or how long it took until the child mastered the Arabic Alphabet reading skill. Other research (Gharaibeh & Alhassan, 2023) highlighted teachers' readiness and competence in teaching the Arabic alphabet to kindergarten children, including children with special needs.

Reading the Arabic alphabet in this study that used Smart ABA started with reading the original letters without harakat because regular schools in Indonesia generally begin with reading the original letters without harakat. So, this academic ability is prioritized because the goal of Smart ABA is that ASD children are sent to regular (mainstreaming) schools.

Researchers also conducted studies on reading the letters with harakat, and also developed a direct method of reading the Qur'an, which will be published in separate journal articles, that can

be applied to children/individuals with ASD, as well as other special needs and normal children. From the results obtained, the ability to read the Arabic alphabet is very individual; maybe the subject can quickly/slowly master reading individual letters in the Smart DTT Program, but on the contrary, it can be slower/faster in the Smart DT Program per blocks or Smart DT between blocks. Most importantly, whatever the problem in a subject, it must be identified and a solution found. The problem also relates to pronouncing Arabic letters with similar sounds and only the difference in the number/location of dots in the same letter shape.

With more and more ASD children successfully reading the Arabic Alphabet, followed by reading the Qur'an, it is expected that more and more will benefit from the development of Smart ABA for this Arabic Alphabet reading program so that they can catch up with others who are not ASD or normal children.

## CONCLUSIONS

The most important finding of this study was the success of all subjects in reading the Arabic alphabet. The study was effective and efficient, taking a relatively short time, which is 6.81 + 1.92 weeks, since the start of the Arabic alphabet reading program.

In various journals, researchers did not find how long it took for normal or special needs children to be able to read the Arabic alphabet. Apart from explaining the process of learning to read the Arabic alphabet, this study also showed how long it took to read all 30 Arabic alphabets. That was, 182–376 (272.4 + 76.97) sessions = 45.5–94.0 (68.1 + 19.24) days = 4.55–9.40 (6.81 + 1.92) weeks. This study explained things that have not been explained in other studies, as well as the steps required in teaching ASD children/individuals to be able to read the Arabic alphabet using Smart ABA.

This study contributes to science in the field of Autism, especially in the field of therapy, so that Muslim ASD children/individuals can read the Arabic alphabet to prepare to read the Qur'an and also academic skills required in regular schools in Indonesia.

## LIMITATION & FURTHER RESEARCH

The results of this study can be applied to ASD elsewhere by following the Smart ABA SOP (Standard Operating Procedure) so that more and more ASD children/individuals have the skills to read Arabic letters in preparation for being sent to regular schools. In addition, to prepare to read the Al-Qur'an. This experimental research was only on five children with ASD; further research would be better if carried out on many subjects with controls in multi-centers while still following the Smart ABA SOP.

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