

ORIGINAL ARTICLE

Effect of Brain Gym in Increasing the Learning Concentration of 6th Grade on Online Learning during the Covid-19 Pandemic

Sapariah Anggraini, Selly Kresna Dewi

Study Program of Bachelor of Nursing and Profession of Nursing, STIKES Suaka Insan, Banjarmasin, 70116, Kalimantan Selatan, Indonesia

ABSTRACT

Introduction: The pandemic Covid-19 has impacted all aspects of life, including the world of education. Since mid-March 2020, teaching and learning activities previously carried out face-to-face have turned into online learning. The phenomenon that occurs, children experience boredom and are less interested in participating in learning, which affects their concentration during the learning process. One way to help improve children's concentration is through Brain Gym. The purpose of this study is to determine the effect of Brain Gym in increasing learning concentration in sixth-graders at *SD 02 Hayaping* in undergoing online learning during the pandemic Covid-19. **Methods:** The research used a Quasi-Experimental with one-group pre-test and post-test design. The 35 respondents in this study were selected using a total sampling method, with the research time from April 5, 2020, to May 5, 2021. The instruments used were the Grid Concentration Exercise questionnaire and the Brain Gym Procedures to provide interventions—analysis using the Friedman test. **Results:** The Brain Gym increases the learning concentration of sixth-grade elementary school children with a p-value of 0.001. The average *pre-test* score was 8, *post-test I* 12, *post-test II* 13, *post-test III* 15, *post-test IV* 17, and *post-test V* 18, so that the concentration significantly increased every week after giving brain gym intervention. **Conclusion:** Brain gym can be developed at Elementary School to help students improve their concentration in online learning during the pandemic COVID-19.

Keywords: Brain gym, COVID-19, Online, Concentration of learning, Elementary School

Corresponding Author:

Sapariah Anggraini, M.Kep

Email: Sapariah@stikessuakainsan.ac.id

Tel: +62 896-5546-9810

INTRODUCTION

Based on *Surat Edaran Kementerian Pendidikan dan Kebudayaan Direktorat Pendidikan Tinggi No. 4 Tahun 2020*, The Indonesian government formally enforces rules of study, worship, and work from home from March 2020. Minimizing and limiting meetings involving physical contact is an effort to reduce the spread of the COVID-19 virus. These conditions have implications for the effectiveness of the learning process, where is the process of learning from home through online or distance learning (1).

According to researchers, online learning has positive and negative impacts on teachers and students. The positive impacts are learning can be done anywhere and anytime so that it is not limited by space and time, students can also learn from their respective homes (study from home), teachers and students understand more about the application of technology in learning, train students' independence in understanding lessons given. The negative impacts are poor internet connection

because not all areas get stable internet network access. Teachers cannot directly assess the activity of students.

According to Francisca et al. (2021), the result of another study is that online learning during the pandemic COVID-19 impacts the quality of work-life among lecturers and factors that cause such poor psychological well-being, stress on technology, usage, and reduced work-life balance (2). Irawan (2020) states psychological impacts of students on online learning during the pandemic covid-19, students have started to get bored, mood changes occur due to many assignments, and are considered ineffective by students (3). Yuzulia (2021) states the students faced some difficulties in learning online such as lack of motivation and easily getting distracted (4). In the study by Winata (2021), the average concentration level of the students at SMAN 2 Mendoyo, Bali Province, during online learning during the pandemic Covid-19, was on average in the low category level 188 students from 342 respondents (5). Sri et al. (2021) stated that the most psychological problem experienced by students during distance learning is stress (6). This finding is in line with the research findings of Barzani & Jamil 2021 that students prefer face-to-face learning to be online because they do not have satisfaction in learning when learning online, while face-to-face learning is more effective in the

learning process (7).

Joel (2021) states 1.5% depression, 3.4% anxiety, and 1.4% stress levels among students amidst the Covid-19 pandemic in the Philippines (8). A study conducted by Nambiar (2020) showed that students perceived the online classes to lack quality. Things like disturbance within the flow of classes, clarifying doubts, lack interest, technical issues, and lack of motivation (9).

Sekolah Dasar 02 Hayaping implements online learning for all classes, from 1st to 6th grade. The interview results with the principal stated that the model of courage used by teachers at *SD 02 Hayaping* was using Whatsapps, Google Form, Google Classroom, Youtube, and others. Some even had 2-3 face-to-face meetings with the zoom meeting application a week.

The results of interviews conducted by researchers about an experience of 6th grade during online learning, some of the students said they were bored because cannot meet with their friends directly, limited socialization during the COVID-19 pandemic due to the rules for implementing social distancing (maintaining distance) so that they stay at home and cannot play with their peers. The methods used, although varied, seem to be repeated, so they lack interest and motivation. When online learning, communication only occurs via phone, video call, or teleconference (zoom meeting) so that understanding of the material is limited and easily distracted.

The results of a preliminary study conducted by researchers using the Grid Concentration Exercise questionnaire on sixty 6th grade students at *SD 02 Hayaping* showed that 10 (16.7%) children were included in the good concentration level, 15 (25%) children with sufficient concentration levels, 28 (46.7%) children with a low level of concentration and 7 (11.6%) children with a deficient level of concentration. The low quality of student achievement is mostly caused by the weakness of students' ability to concentrate on learning. As a student, if not able to concentrate on the lesson being presented cannot be mastered. The lack of student concentration in learning hampers the learning process greatly.

According to Sharma et al. (2018), the result of another study in Portugal shows that using e-learning has a positive impact on students' easy access to learning and can be done anywhere. However, the weakness of e-learning is not measuring the level of student concentration and learning motivation. So, this study develops a facial emotional analysis platform to assess students' concentration in e-learning (10).

Several ways can help improve children's concentration, including group guidance service methods, educational games techniques, and brain gym. A study conducted

by Pratiwi & Yuan (2020) Brain Gym significantly affects elementary students' concentration. Group concentration's pre-test mean result was= 13.633, and post-test was= 21.00 (11). Researchers chose to apply brain gym because this method is quite easy and can be done on the sidelines of class time with simple and fun movements. Brain exercises are implemented online through video media to comply with health protocols during the covid pandemic. So, the purpose of this study is to determine the Effect of the Brain Gym on the Learning Concentration of 6th-grade Elementary *Sekolah Dasar 02 Hayaping* in the Process of Online Learning During the Covid 19 Pandemic.

MATERIALS AND METHODS

This research uses a quasi-experimental with pre- and post-test design. This study has received ethical approval No. 265/UMB/KE/XII/2021 from the University of Muhammadiyah. The sample used in this study was 35 respondents with a total sampling method. The inclusion criteria are the sixth grade *SD 02 Hayaping* is in good physical and mental health and the results of the learning concentration level based on the Grid Concentration Exercise questionnaire ≤ 10 —exclusion criteria in this study: sick (not present).

Instruments

The instruments in this study used the Grid Concentration Exercise questionnaire adopted from D.V Haris and B.L Hariss in Puspaningrum, 2013, consisting of 10 x10 numbered squares from 00 to 99, which placed randomized, respondent sorted the numbered squares ascendingly in 60 seconds. The researcher collected learning concentration data to distribute the Grid Concentration Exercise instrument in a questionnaire to students before and after the brain gym intervention. The Grid Concentration Exercise questionnaire assessment scores were as follows: Excellent concentration learning >21 ; Good concentration learning 16-20; Fair concentration learning 11-15; Less concentration learning 6-10 and very low concentration learning <5 . This study's video about the Brain Gym Movement makes it easier for students to follow the movement. Researchers use Standard Operating Procedures (SOP), which serve as a guide in providing Brain Gym interventions with the following movements: Cross crawl; the owl; activate the hand (arm activation); waving feet (foodlex); steady stance (the grounder); filling the energy (energizer), and hip swing (the rocker). The instrument in this study was not tested for validity and reliability. It has been declared valid and reliable by Puspaningrum, 2013, with valid t-test results of 8.771 and an r-count of 0.96 (12). In this study, Puspaningrum permitted the author to use the Indonesian language to the instrument, the researcher carried out a back-translation process.

Intervention

The Brain Gym intervention was given for one month.

The study was conducted from April 5, 2020, to May 5, 2021. In the first week, a pre-test was conducted to determine the concentration level in students' learning before being given an intervention. After that, children who experienced low and very low concentration levels were given intervention in a brain gym based on the Grid Concentration Exercise questionnaire results. Post-test I was carried out at the end of the week on Friday, then intervention was given in the second week, post-test II was carried out at the end of the week, and so on until the intervention and post-test V.

The Brain Gym intervention was given three times a week with 10-15 minutes carried out on Mondays, Wednesdays, and Fridays. The intervention was given by the researcher playing a video of brain gym exercise. Then, this video was displayed on the zoom application. The teacher helped collect students who were in low concentration in one class. After that, students watched and followed the brain gym movement displayed via zoom, guided by the researcher and the teacher.

The data were analyzed and found if the effect of the Brain Gym was significant p-value <0.05 by the Friedman test (non-parametric). Friedman test was chosen because the data was unnormal distribution.

RESULTS

The frequency distribution of respondents' characteristics based on age and gender, as stated in Table I. shows that the most age groups in this study were students of 6th grade *SD 02 Hayaping* aged 11 as many as 28 children (80%), and frequency distribution of respondent characteristics based on gender, are 22 female students (63%). Based on Table II. above shows a significant p-value of 0.001 which means <0.05, it can be concluded that H_a is accepted, or Brain Gym influences increasing learning concentration in 6th grade of *SD 02 Hayaping* in Undergoing Online Learning During the Covid-19 Pandemic. Based on Figure 1. The average score of students learning concentration levels in the process of online learning pre-test score was 8, *post-test I* 12, *post-test II* 13, *post-test III* 15, *post-test IV* 17, and *post-test V* 18, so that the concentration significantly increased every week after giving brain gym intervention.

Table I: Frequency distribution of respondent characteristics by age and gender

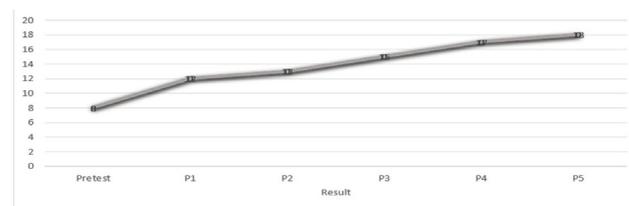
Variables	Total	
	f	%
Age		
11 years	28	80
12 years	7	20
Total	35	100
Gender		
Female	22	63
Male	13	37
Total	35	100

* f : frequency; % : percentage

Table II: Friedman test analysis of the effect of brain gym in increasing the learning concentration of 6th grade on *sekolah dasar 02 hayaping* on online learning

Measurement	Average	N	Chi-Square	df	p-value
<i>Pre-test</i>	1.01				
P1	2.07	35	169.8	5	0.001
P2	3.04				
P3	4.00				
P4	5.07				
P5	5.80				

*P: post test ; p-value : significance value ; N : total respondents ; df : degree of freedom



Note:

- Pre-test*: Pretest (1st Week)
- P1**: *Post-test I* (1st Week)
- P2**: *Post-test II* (2nd Week)
- P3**: *Post-test III* (3rd Week)
- P4**: *Post-test IV* (4th Week)
- P5**: *Post-test V* (5th Week)

Figure 1: Average score of students' learning concentration levels in the process of online learning

DISCUSSION

The result of the study, the effect of the brain gym, is proven to affect the increase of learning concentration in 6th grade of *SD 02 Hayaping* in undergoing online learning during the pandemic covid-19 with a p-value of 0.001. Judging from the post-test results using the Grid Concentration Exercise questionnaire, every week, there was an increase in the average score from the first week to the fifth week. For the first, second, and third weeks the average concentration score of children is in the fair category, while for weeks IV and V, the average concentration score of children is in a good category. Ayinosa (2009) revealed that the brain gym could improve learning abilities without age restrictions. In Brain gym, you will get brain fitness characterized by a smooth flow of blood to the brain or supplying volume O2 maximally adequate. O2 volume maximum can take up oxygen by heart and lungs, so blood flows to all body tissues, including the brain, and affects the brain to work optimally (13). Brain gym will improve blood flowing and oxygen to the brain and movements that can stimulate the work and functioning of the brain optimally.

It was also revealed by Fanny (2009), which revealed that many benefits could be obtained by doing brain gym. Light movements with games through the hands and feet can provide stimulation or a stimulus to the brain. The movement that produces the stimulus can improve cognitive abilities, harmonize the ability to move and think, improve the balance between emotional and

logical control, optimize the function of the five senses, maintain flexibility and body balance, improve memory, improve hearing and vision acuity (14).

A study conducted by Pratiwi & Yuan (2020) Brain Gym significantly affects elementary students' concentration; group concentration's pre-test means result was= 13.633, and post-test was= 21.00 (11). Billy (2019) states that Brain Gym is a movement done by stimulating brain waves through light movements involving the hands and feet. Movements generated from the brain gym can provide a stimulus or a stimulus on the brain to increase the ability to study and concentrate on students because all brain parts are used to learn and concentrate (15).

Denison (2006) divides the brain into three functions, namely the lateral dimension (left-right brain), focusing dimension (front-back brain), concentration dimension (upper-bottom brain). Movements Brain gym exercises in the lateral dimension are cross movements that stimulate the executive-visuospatial cognitive domain, attention, and memory. The movement works by increasing nerve impulses in the corpus callosum and increasing the ability of the left and right hemispheres. Movements Brain gym exercises that are included in the lateral dimension are the owl's movement; activate the hand (arm activation); waving feet (foodlex); steady stance (the grounder), which functions to stimulate the executive-visuospatial cognitive domain, attention, and memory. Brain gym movements that are included in the concentration dimension are energy filling movements (energizer); and hip swing (the rocker) (16). Physiologically, the stimulus caused by some of these movements will stimulate muscle vesicles to secrete pre-ganglionic acetylcholine. Acetylcholine then goes to the part of the brain associated with the attention domain so that this movement can improve the function of the attention domain or focus on attention so that it helps increase concentration (17). The limitation of this study: The researcher only used one intervention group in the study (not using the control group). Despite that, there would be a bias in selecting the sample since this research used non-probability sampling.

CONCLUSION

Based on the data analysis carried out in this study, the brain gym has an effect in helping to increase the learning concentration of 6th-grade students at the *SD 02 Hayaping* in undergoing online learning during the pandemic Covid-19. Learning concentration is very necessary for the learning process because concentration is an aspect that supports students in learning. If students cannot concentrate on the ongoing lesson, it will impact students themselves regarding the lack of understanding in the lesson, affecting the learning objectives.

ACKNOWLEDGEMENTS

We are gratefully to *Sekolah Dasar 02 Hayaping* for allowing us to collect data there.

REFERENCES

1. Kemdikbud. Surat Edaran Mendikbud No 4 Tahun 2020 Tentang Pelaksanaan Kebijakan Pendidikan Dalam Masa Darurat Penyebaran Corona Virus Disease (Covid- 19) [Internet]. 2020. Available from: <https://pusdiklat.kemdikbud.go.id/surat-edaran-mendikbud-no-4-tahun-2020-tentang-pelaksanaan-kebijakan-pendidikan-dalam-masa-darurat-penyebaran-corona-virus-disease-covid-1-9/>
2. Francisca Sri Susilaningsih, Maria Komariah, Ati SuryaMediawatiVBML. Quality of Work-Life among Lecturers during Online Learning in COVID-19 Pandemic Period: A Scoping Review. *Malaysian J Med Heal Sci* [Internet]. 2021;17(SUPP4):163–6. Available from: https://medic.upm.edu.my/upload/dokumen/2021061711512533_MJMHS_0374.pdf
3. Irawan AW, Dwisona D, Lestari M. Psychological Impacts of Students on Online Learning During the Pandemic COVID-19. *KONSELI J Bimbingan dan Konseling* [Internet]. 2020 May 31;7(1):53–60. Available from: <http://ejournal.radenintan.ac.id/index.php/konseli/article/view/6389>
4. Yuzulia I. The Challenges of Online Learning during Pandemic: Students' Voice. *Wanastra J Bhs dan Sastra* [Internet]. 2021 Mar 17;13(1):08–12. Available from: <https://ejournal.bsi.ac.id/ejurnal/index.php/wanastra/article/view/9759>
5. Winata IK. Konsentrasi dan Motivasi Belajar Siswa terhadap Pembelajaran Online Selama Masa Pandemi Covid-19. *J Komun Pendidik* [Internet]. 2021 Jan 30;5(1):13. Available from: <http://journal.univetbantara.ac.id/index.php/komdik/article/view/1062>
6. Sri Wulan Lindasari, Reni Nuryani NSS. The Impact of Distance Learning on Students' Psychology During The Covid-19 Pandemic. *J Nurs Care* [Internet]. 2021;4(2). Available from: <https://jurnal.unpad.ac.id/jnc/article/view/30815>
7. Barzani SHH, University TI. Online Education during COVID-19 Pandemic: An Empirical Study. *Int J Soc Sci Educ Stud* [Internet]. 2021;8(2). Available from: https://www.researchgate.net/publication/352038447_Students%27_Perceptions_towards_Online_Education_during_COVID-19_Pandemic_An_Empirical_Study
8. Acob JRU, Arifin H, Dewi YS. Depression, Anxiety and Stress among Students amidst COVID-19 Pandemic: A Cross-Sectional Study in Philippines. *J Keperawatan Padjadjaran* [Internet]. 2021 Aug

- 1;9(2):102. Available from: <http://jkip.fkep.unpad.ac.id/index.php/jkip/article/view/1673>
9. Nambiar D. The impact of online learning during COVID-19: students' and teachers' perspective. *Int J Indian Psychology*. 2020;8(2).
 10. Sharma, P., Esengunyl, M., Khanal, S. R., Khanal, T. T., Filipe, V., & Reis MJ. Student concentration evaluation index in an e-learning context using facial emotion analysis. *Int Conf Technol Innov Learn Teach Educ* [Internet]. 2018;(pp. 529-5. Available from: <https://arxiv.org/ftp/arxiv/papers/1909/1909.12913.pdf>
 11. Pratiwi WN, Pratama YG. Brain Gym Optimizing Concentration on Elementary Students. *Str J Ilm Kesehat* [Internet]. 2020 Nov 1;9(2):1524–32. Available from: <https://sjik.org/index.php/sjik/article/view/498>
 12. Puspaningrum Q. Pengaruh Latihan Meditasi Terhadap Peningkatan Konsentrasi Latihan. *Repository.upi.edu*. 2013;
 13. Ayinosa. Brain Gym (Senam Otak) [Internet]. 2009. Available from: <http://book.store.co.id/2009>
 14. Fanny R. Brain Gym Tingkatkan Potensi Seseorang [Internet]. 2009. Available from: <http://kiatsehat.com/2009>
 15. Bili, Lukas Dairo MDL. Efektivitas Senam Otak Dalam Meningkatkan Konsentrasi Belajar Siswa. *J Penelit dan Pengemb Pendidik*. 2019;2(2).
 16. Denison EP. *Buku Panduan Lengkap Brain Gym*. Jakarta: Grasindo; 2006.
 17. Sherwood L. *Fisiologi Manusia dari Sel ke Sistem*. Jakarta: EGC; 2014.