

## REVIEW ARTICLE

# The Effect of Playing Puzzle on the Elementary Student's Concentration for Learning Achievement: Literature Review

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## ABSTRACT

Concentration is important for children to achieve good learning achievement. It is often found that students lack concentration in studying when facing exams. This review is to examine articles that identify effectiveness of puzzle played therapy on increasing concentration of elementary students. Design study: literature review. Articles searches through some database, ScienceDirect, Proquest and Google Scholar using keywords "elementary student, puzzle, concentration", and found 3087 articles (ScienceDirect: 824, Proquest: 1575, Scholar: 688). Four articles were selected based on inclusion criteria, namely interventions using any media with a puzzle concept and within the research range of 2018-2022. Literature review indicated that nursing interventions playing puzzles can be used as learning tool to stimulate brain and increase concentration, so student learning achievement can be achieved. Playing puzzles can be used as learning tool that has a good effect for brain to improve learning achievement.

**Keywords:** Puzzle; Concentration; Elementary Students.

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## INTRODUCTION

At the end of each school level, students will face school final exams. It is often found that students lack concentration in studying because the anxiety about the test result or score so they cannot complete exams with good results. The concentration of learning itself is an important thing in supporting the learning process of children at school, especially elementary school children who often have problems concentrating. The learning concentration is a concentration of attention and thoughts only on what we are learning (1). Previous research found that playing puzzle can improve motivation, and learning ability in some subject but didn't generalized in learning achievement.

According to (2), based on the results of a study conducted by the IEA (International Association for The Evaluation of Education Achievement), the concentration and reading skills of 4th grade elementary school students in Indonesia are at

the lowest level with an average reading test score of 51.7%. Where Indonesian children are only able to master 30% of the reading material. In a study conducted by (3), it was found that 23 students (54.8%) of 42 students at SDN 3 Candisari did not concentrate or focus on learning.

Concentration can decrease when the nerve muscles experience tension and the brain feels a lack of energy so that it experiences a lack of energy intake which causes the brain to not function optimally (4). According to (5), Concentration is an important aspect for children to get good learning achievements.

Puzzle is an alternative that can be used to train concentration. According to (5), puzzles are designed to help develop mental skills. In a way, the first builds mental stamina to concentrate continuously and the second way the exercise introduces so many different types of data that the experience gained can train you to find solutions to how to structure the data. According to (6), the benefits of playing puzzles are finding shapes, practicing shape abstraction skills. According to (7), puzzle learning media can increase students learning concentration. The author wants to connect result

of some study to know about the effect of playing puzzle on the elementary student's concentration are have impact to learning achievement.

## METHODOLOGY

### Study Design

This study utilized Literature review. this design was used because author want to clarify from some previous study to see the impact of playing puzzle on learning achievement. Research articles searches through some electronic database, such as Science Direct, Proquest and Google Scholar. According to (8), literature review is a factor of academic writing showing knowledge and understanding of academic literature about a specific topic placed in the context. An assessment of documents also includes an important assessment of devices; This is why it is called a literary assessment rather than a literary report.

### Population, Samples and Sampling

According to (9), population is a generalization area consisting of subjects/objects that have the qualities and characteristics set by the researcher to be studied and then drawn conclusions. According to (10), the population in the study are subjects (for example, humans: clients) who meet predetermined criteria. Population is all research journals with the topic of puzzle effects on increasing the concentration of elementary school children's learning. According to (10), the sample is part of the affordable population that can be used as research subjects through sampling techniques. Samples that can be used meet the inclusion criteria, the inclusion criteria are the general characteristics of research subjects from an affordable target population and will be studied. sample is a research journal with the topic of puzzle effects on increasing the learning concentration of elementary school children who meet the inclusion criteria and exclusion criteria. The inclusion criteria in this study include: 1) experimental research, 2) the treatment given is in the form of playing puzzles, 3) the impact of the treatment on learning concentration or learning achievement of elementary school children.

### Instruments

This study used some online databased such as, Science Direct, Proquest and Google Scholar. With PICOS Framework to answer the research question, P: elementary student who in study, I: Playing Puzzle Game, C: without playing puzzle, O: elementary student's concentrations (learning achievements).

### Procedure

Search strategy for English articles relevant to the topic of this study using the keywords: "elementary student", "puzzle", "concentration"; on several databases such as Science Direct, Proquest and

Google Scholar, with a time limit from February 2018 to February 2022. Full text articles were reviewed to obtain research journals that match the inclusion criteria in this study. Initially, 3087 articles were obtained that matched the topic, but only 4 articles matched the sample inclusion criteria (using limit time 2018-2022, full text article, result of study, PICO).

### Data Analysis

Journal data analysis in this study uses the critical appraisal method. According to (11), critical appraisal is a systematic process to test the validity, results and suitability of a research result. Aspects that were criticized were: year of publication of the article, design, treatment (intervention), intervention and control groups (comparison if any), dependent variable measured, instrument used, research results, and conclusions.

### Ethical Clearance

According to (12), as an Ethics Commission engaged in Health Research, KEPK-BPPK has the following main duties and functions: Conduct a study of the ethical aspects of a health research protocol that includes humans as subjects and utilizes experimental animals submitted through the Health Research and Development Agency, Provide ethical approval (ethical clearance/ethical approval), Monitoring and evaluating the implementation of research that has obtained ethical approval, Conducting socialization of litkes ethical guidelines both within the Litbangkes Agency and in other institutions, Organizing litkes ethics training both within the Litbangkes Agency and in other institutions, Make activity reports to the Chair of KEI and KNEPK, The implementation of the points mentioned above refers to the guidelines for the approval of litkes ethics. There is no ethical clearance in this study because this study used Literature review design.

## RESULTS

Some articles that found in this study show that playing game or something activity that stimulate brain especially puzzle can increase the concentration, so it can make student to raise a good learning achievement. A critical assessment of the 4 research articles used as samples in this literature review is described in Table I.

## DISCUSSION

According to (13), Jigsaw method (Numbered card) can improve elementary student learning motivation, and stimulate the development of students learning concentration. According to the author, jigsaw method is same with puzzle mechanism that can stimulate

**Table I : Critical Appraisal**

No	Scientific work title & Author	Variable	Study Design	Results (Outcome)
1	The Effectiveness of Jigsaw Learning Model by Using Numbered Cards: Strategy for Increasing mathematics Learning Motivation Students in Elementary School.  (BK, MuhKU & Hamna, 2021)	-Jigsaw: Numbered Cards  - Learning motivation	Quasi Experiment Nonequivalent Control Group Design	The results of this study indicate that the students' motivation in the experimental class is better than the control class, with evidence that there has been an increase in the learning process which has an impact on increasing students' motivation to learn mathematics consistently from the first meeting to the third meeting with the good assessment categories. The results of this study are that the use of numbered cards makes it easier to organize students' group learning activities through the implementation of the Jigsaw learning model, stimulates the development of students learning concentration, and is even more enthusiastic for students to be actively involved in completing their learning tasks. (13)
2	Applying Digital Escape Rooms Infused with Science Teaching in Elementary School: Learning Performance, Learning Motivation, and Problem-Solving Ability.  (Yuan Huang, Han Kuo & Chih Chen, 2020)	-Digital Escape Room (complete tasks by using props, riddles, clues, crossword game, and puzzle).  - Learning performance, learning motivation, problem-solving ability.	Quasi-experimental	The results showed that the students in the experimental group had higher learning motivation and problem-solving ability scores than those in the comparison group. However, the two groups had the same learning performance levels in science class. In general, the students had positive perceptions of the DER experience, and they believed the DER teaching strategy was compelling and effective. Finally, suggestions based on this research study's results are offered with the hope of providing references for teaching practice and future research.(14)
3	Fun Math Learning for Elementary School Students Through Interactive Puzzle Media.  (Ramlah, Riana N, Abadi AP, 2022)	-Fun Math Learning (elementary students)  - Interactive Puzzle Media	Descriptive Qualitative	The research findings showcase that learning mathematics using interactive puzzle media is enjoyable for students, and there is a strongly positive response from 80% of them which can be seen from the activeness and enthusiasm demonstrated during the learning process. It further indicates that the application of interactive puzzle media increases students' confidence, fosters learning motivation, develops self-reliant learning, and provides clearer understanding of recognizing the concept of numbers and recognize the concept of numbers and geometric shapes. With these specialties, interactive puzzle would be appropriate instructional media and technology for learning.(15)
4	The Effect of Crossword Puzzle Games in reading and Writing Ability Toward Dyslexia and dysgraphia Students in elementary School.  (Anggriawan A, 2018)	-Crossword Puzzle  -Reading and writing ability (Student in Elementary School)	Quasi Experiment Nonequivalent Control Group Design	The researcher found eight indications of dyslexia among the students, they are addition, omission, inversion, reversal, substitution, reading slowly, easy to forget the letter, and unconfident. Then, three indications of dysgraphic students, they are bad handwriting, writing out of the line sheet, and writing slowly. The researcher also proves that crossword game is effective to help students with these disabilities. It is described from the improvement of the students score. It is supported by the result of t-test which Sig. tailed > Sig. level ( $\alpha$ ) displayed the number of Sig. tailed is 0.104, it means greater than 0.05. It can be concluded that Crossword Games gave significant difference to the students score. The students enjoy and feel fun while the crossword game puzzle is implemented to the learning process. (16)

brain to focus so it will make person more concentration. It's related to Yuliani in (14), There are several benefits playing puzzles: one of them is sharpening the brain (Focus).

According to (15), Digital Escape Room (DER) made the student had positive perceptions of the DER experience, and the students believed the DER teaching strategy was compelling and effective, and the experimental group had higher learning motivation and problem-solving ability scores. It's related with author opinion, that the DER method can improve the learning achievements because from the research showed that learning motivation and problem-solving ability was improved. According to (16), puzzles are known as one of the brain teasers that can be used as a medium for children's learning while stimulating their brain development. one of them, learn to do target setting.

According to (17), the research findings showcase that learning mathematics using interactive puzzle media is enjoyable for students, and there is a strongly positive response from 80% of them which can be seen from the activeness and enthusiasm demonstrated during the learning process. It further indicates that the application of interactive puzzle media increases students' confidence, fosters learning motivation, develops self-reliant learning, and provides clearer understanding of recognizing the concept of numbers and recognize the concept of numbers and geometric shapes. It's related with author opinion, that puzzle that used in mathematic learning can increase student interest to study mathematic. So, it can mean that student will concentrate with the learning subject. According to (18), Puzzle playing therapy had effect to the grade one elementary student concentration (SD Negeri Pokoh 1, Ngemplak, D.I Yogyakarta).

According to (19), that crossword game is effective to help students with these disabilities. It is described from the improvement of the students score. It is supported by the result of t-test which Sig. tailed > Sig. level ( $\alpha$ ) displayed the number of Sig. tailed is 0.104, it means greater than 0.05. It can be concluded that Crossword Games gave a significant difference to the students score. The students enjoy and feel fun while the crossword game puzzle is implemented to the learning process. It's related with author opinion, both healthy and disabled children, there will be a brain stimulation process when given a puzzle playing intervention. According to (20), there is an effect of using puzzle media on student learning outcomes (learning achievements).

## CONCLUSION

The result of a literature review in 4 Research Journals related to the application of Nonpharmacological nursing intervention in increasing learning concentration, so the learning achievement increase in the form of playing puzzles is proven to increase learning concentration and elementary student learning achievement. This is because when the concentration of learning makes it easy for student to do exam or assignments at school, they will get good grades, so learning achievement will be achieved. It proves that puzzle is effectively used as learning media in education, especially for elementary student.

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## REFERENCES

1. Triyono, Mastur. Materi Layanan Klasikal Bimbingan dan Konseling Bidang Bimbingan Sosial. Yogyakarta: Paramitra; 2014.
2. Megawati W, Ike H, Maunaturrohman A. Pengaruh Senam Otak (Brain Gym) Terhadap Tingkat Konsentrasi Belajar Siswa Kelas IV SDN Wonoayu Kecamatan Pilangenceng Kabupaten Madiun Jawa Timur. Jurnal Keperawatan, Jurnal Ilmiah Penelitian [Internet]. 2017 [cited 2022 Sep 29];13(1):24–30. Available from: <https://digilib.itskesicme.ac.id/ojs/index.php/jip/article/view/318>
3. Retnaningsih D, Kustriyani M. Hubungan Antara Kualitas Tidur Dengan Konsentrasi Belajar Pada Anak Usia Sekolah Di SD Negeri 3 Candisari Kecamatan Purwodadi Kabupaten Grobogan. Jurnal Ners Widya Husada [Internet]. 2014 [cited 2022 Jun 21];1(1). Available from: <http://journal.uwhs.ac.id/index.php/jners/article/view/124>
4. Nuryana A, Purwanto S. Efektifitas Brain Gym Dalam Meningkatkan Konsentrasi Belajar Pada Anak. Indigenous Jurnal Ilmiah Psikologi [Internet]. 2010 [cited 2022 Jun 21];12(1). Available from: <https://journals.ums.ac.id/index.php/indigenous/article/view/1558/1096>

5. Gamon D, Bragdon AD. Cara Baru Mengasah Otak Dengan Asyik: Temuan-Temuan Mutakhir Tentang Kinerja dan Struktur Otak Plus Permainan-Permainan Heboh Untuk Mengasah 6 Zona Kecerdasan. Rahmani A, editor. Bandung: Kaifa; 2004.
6. Yuriastien E, Prawitasari D, Febry AB. Games Therapy Untuk Kecerdasan Bayi dan Balita. Fabianto AA, editor. Jakarta: WahyuMedia; 2009.
7. Darmawan LA, Reffiane F, Baedowi S. Pengembangan Media Puzzle Susun Kotak Pada Tema Ekosistem [Internet]. Vol. 3, Jurnal Penelitian dan Pengembangan Pendidikan. 2019 [cited 2022 Jun 21]. Available from: <https://ejournal.undiksha.ac.id/index.php/JJL/article/view/17095>
8. IAD The University of Edinburgh. Literature Review [Internet]. The University of Edinburgh. 2021 [cited 2022 Jun 21]. Available from: <https://www.ed.ac.uk/institute-academic-development/study-hub/learning-resources/literature-review>
9. Sugiyono. Metode Penelitian: Kuantitatif, Kualitatif dan R&D. Bandung: Alfabeta; 2016.
10. Nursalam. Metodologi Penelitian Ilmu Keperawatan: Pendekatan Praktis. Jakarta: Salemba Medika; 2016.
11. Mendrofa F. Kritik Jurnal. Wordpress. 2010.
12. Badan Litbangkes Kemenkes RI. Layanan Etik (Ethical Clearance) Penelitian. Badan Litbangkes Kementerian Kesehatan Republik Indonesia. 2017.
13. BK MuhKU, Hamna. The Effectiveness of Jigsaw Learning Model by Using Numbered Cards: Strategy for Increasing Mathematics Learning Motivation Students in Elementary School. *Pedagogik Journal of Islamic Elementary School* [Internet]. 2021 [cited 2022 Jun 21];4(1):1–18. Available from: <http://ejournal.iainpalopo.ac.id/index.php/PiJIES/article/view/1765/1380>
14. Syamsuddin H. Brain game untuk balita : inspirasi permainan sederhana untuk menstimulasi kecerdasan, kreativitas dan bakat anak. Rahmat A, editor. Yogyakarta: Media Pressindo; 2014. 188–189 p.
15. Yuan Huang S, Han Kuo Y, Chih Chen H. Applying Digital Escape Rooms Infused with Science Teaching in Elementary School: Learning Performance, Learning Motivation, and Problem-Solving Ability. *ScienceDirect*. 2020 Sep;37.
16. Inderawati DM. Mengapa Bermain Puzzle Sangat Baik untuk Anak? [Internet]. *KlikDokter*. 2016 [cited 2022 Jun 21]. Available from: <https://www.klikdokter.com/rubrik/read/2860112/mengapa-bermain-puzzle-sangat-baik-untuk-anak>
17. Ramlah, Riana N, Abadi AP. Fun Math Learning for Elementary School Students Through Interactive Puzzle Media. *Supremum Journal of Mathematics Education* [Internet]. 2022 [cited 2022 Jun 21];6(1). Available from: <https://journal.unsika.ac.id/index.php/supremum/article/view/5775>
18. Ramadhani HS, Lestiawati E, Wahyuningsih M. Pengaruh Terapi Bermain Puzzle Terhadap Konsentrasi Belajar Anak Kelas I Di Sd Negeri Pokoh 1 Ngemplak, Sleman, D.I. Yogyakarta. *Medika Respati: Jurnal Ilmiah Kesehatan* [Internet]. 2016 [cited 2022 Jun 21];11(4). Available from: <https://medika.respati.ac.id/index.php/Medika/article/view/63>
19. Anggriawan A. The Effect of Crossword Puzzle Games in reading and Writing Ability Toward Dyslexia and dysgraphia Students in elementary School [Internet] [Thesis (Undergraduate)]. [Surabaya]: Universitas Islam Negeri Sunan Ampel Surabaya; 2018 [cited 2022 Jun 21]. Available from: <http://digilib.uinsby.ac.id/id/eprint/26476>
20. Yunita S, Supriatna U. Pengaruh Penggunaan Media Puzzle Terhadap Hasil Belajar Siswa. *Syntax Idea* [Internet]. 2021 Aug 20 [cited 2022 Jun 21];3(8). Available from: <https://jurnal.syntax-idea.co.id/index.php/syntax-idea/article/view/1451>