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THINK PAIR SHARE LEARNING ASSISTED BY WORDWALL ON MATHEMATICS LEARNING OUTCOMES

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Abstract:
Mathematics is a mandatory subject that plays an important role, therefore the lack of adjustment to learning models and supporting media in the learning process can be one of the factors causing low learning outcomes. The purpose of this study was to determine the effect of think pair share supported by wordwall on the mathematics learning outcomes of fifth-grade students at Elementary School. The research was conducted at SDN Batu Ampar 02 Pagi in the second semester of the academic year 2023/2024. The research method used was quantitative research with a quasi-experimental design. The sampling system used non-random sampling of 30 students in the experimental class and 30 students in the control class. The instrument used was an essay test that had been validated and tested for reliability. In data analysis, tests for analysis requirements were conducted through tests of normality (Kolmogorov-Smirnov) and homogeneity, while hypothesis testing used independent sample t-test with SPSS version 29.0.0.0. Based on the analysis, it was found that the average learning outcomes of the experimental class using think pair share supported by wordwall were 79.75, which was significantly better than the average learning outcomes of the control class students using conventional learning, which scored 70.25. The t-test result obtained a sig value (2-tailed) of 0.003 (0.003 < 0.005), hence Ha is accepted and H0 is rejected. Therefore, it can be concluded that in this study, there is an influence of the think pair share supported bywordwall learning model on the mathematics learning outcomes of fifth-grade elementary school students.
Keywords : Think Pair Share, Wordwall, Learning Outcomes.

INTRODUCTION

In the world of education, studying and learning are two things that have a close relationship. Studying is often interpreted as a process of activities carried out to provide changes in a person through experiences such as someone who originally did not understand to understand (Lestari & Sembiring, 2020). Meanwhile, the nature of learning, according to Law No. 20 of 2003 article 1 paragraph 20 concerning the National Education System (Sisdiknas) states that learning is part of the interaction between students and teachers and learning resources in a learning environment. Learning is a way used by teachers in schools to bring positive changes to students.

Therefore, a teacher needs a variety of plans made before implementing learning, such as material, learning objectives, models, strategies, and methods used, as well as learning evaluations that can be used as a teacher's guide in learning (Widyanto & Wahyuni, 2020). The existence of learning that is well prepared by the teacher can have a good impact on the surrounding environment. When looking from the perspective of educators, learning and learning will be considered an important activity in the educational process because it can be a benchmark for achieving or not achieving educational goals (Arfani, 2016)

Learning activities in elementary schools that often get a less pleasant response are learning mathematics. Mathematics is considered to be a difficult lesson to understand, which increases anxiety and reduces students' confidence to face math assignments or exams (Wiryana & Alim, 2023). In fact, mathematics is a basic science that has many benefits to be able to solve various kinds of problems in various fields of science. According to Acharya (2017) without mathematics, science and technology cannot develop properly because mathematics is the root of the advancement of development in these fields. Understanding this, when examined, mathematics, which is often felt to be a scary subject and the learning process is stressful, turns out to have a fundamental role in life so that because of this role mathematics is one of the compulsory subjects at every level of education. According to Fitri (2017), the concept of mathematics in elementary schools, especially the high grades, does require a complex understanding because the aspects of mathematical knowledge taught include numbers, geometry and measurement, and data processing. In this concept, students are introduced to abstract concepts and trained to be able to solve problems using logic, and draw conclusions based on available information. If students are accustomed to solving problems using mathematical concepts, the impact will affect students' ability to think structurally, systematically, and critically (Kurniyanthi et al., 2019).

However, it cannot be denied that there are still many students' inability to understand and solve math problems. The emergence of students' inability to understand mathematical concepts can affect the assessment of their learning outcomes (Ndemo & Mtetwa, 2021).

According to Nuriati el al (2021), mathematics learning outcomes are evaluations at the end of a series of learning processes, usually in the form of tests to measure how well students understand and master mathematical subject matter. The assessment of learning outcomes itself usually includes cognitive, psychomotor, and affective abilities possessed by students during the learning process (Mira et al., 2021). Learning outcomes guide teachers to find information related to student learning development, so that teachers can find solutions to the next actions that can be given so that learning objectives can be achieved (Nabillah & Abadi, 2019). Based on this statement, mathematics learning outcomes can be concluded as an assessment obtained by students after going through the mathematics learning process and being an illustration of how well the achievement of learning objectives can be carried out. Therefore, according to Wiraharta (2020), mathematics learning outcomes in elementary schools need to be adjusted to be able to provide the impact of a good learning experience, these outcomes include: 1) student involvement in expressing their ideas/opinions during the learning process, 2) training the

process of concrete thinking stages to abstract thinking stages, 3) developing a critical, careful, creative, and logical personality.

Based on observations made while carrying out the Pengenalan Lapangan Persekolahan (PLP) in elementary schools, a problem was found in the form of low math learning outcomes in one of the high classes, namely class V. This can be seen from the lack of maximum assessment on self-evaluation or worksheets, both independently and in groups. This can be seen from the lack of maximum assessment on self-evaluation or worksheets, both independently and in groups. In addition, students also admit that math is their least favorite subject because it is difficult to understand, the learning atmosphere that occurs during the learning process is also less fun because usually to test students' abilities, teachers often ask students to do problems on the blackboard. In working on problems, students also tend to rely more on friends' answers than their own abilities. This is further reinforced by the teacher's statement that students lack initiative in learning independently, relying on friends' answers, and doing assignments by parents. The teacher also admitted that from the teacher's side, the cause of students' difficulties in learning is the lack of livening up the classroom atmosphere by applying appropriate learning models and media (Sihombing et al., 2023). This situation occurs because teachers have not been able to fully try various kinds of models and media in the learning process. Based on the review of experience, the researcher chose to use the think pair share learning model assisted by wordwall to deal with learning problems that occur in grade V students. According to Khoirudin & Supriyanah (2021) the think pair share learning model was introduced by Frang Lyman as an alternative to cooperative learning by forming discussion groups in small numbers or only in pairs. According to Nyoman Wedi (2023) with the think pair share model, students have the opportunity to link their understanding to solve problems independently (think), then communicate with each other to solve these problems with their peers or in pairs (pair), finally students with their abilities gain confidence to be able to express the results of their thinking (share). The use of the think pair share model in the learning process is also able to bring the learning atmosphere to be more active because it triggers students' curiosity to learn (Meilana et al., 2020). The think pair share learning model also trains students to be disciplined towards the time allotted to think, respond, and communicate (Malau et al., 2023). Based on this statement, the

think pair share learning model provides time for students to think independently by developing their knowledge, being open to knowledge from others, and also increasing their confidence to convey their knowledge.

As a complement so that the learning process can be better, it is necessary to utilize appropriate learning media to be able to improve the learning atmosphere to make it more enjoyable (Nurfadhillah et al., 2021). The wordwall application is one of the companion media used to complement the think pair share learning model. According to Aidah & Nurafni (2022) wordwall is one of the learning media in the form of games based on digital applications that can be a source of learning to evaluation. Types of games in wordwall can include quiz, survey, find the match, and others to be able to attract activeness in learning (Dotutinggi et al., 2023). The advantage of wordwall is that it has many educational game features that are free of charge, making it easier for teachers to access and support enthusiastic learning (Pradani, 2022). Wordwall can be a quiz media under the guise of a fun game.

The previous studies that have related themes with this research are used as reference materials, among others, research conducted by Rakhmi and Fahmi (2019) which shows that using think pair share students tend to learn with discipline, and are active in every discussion session offered so that the use of this model is considered quite effective when applied in the teaching and learning process. Other research conducted by Rachmawati and Erwin (2022) also shows that if the think pair share model is combined with the help of learning media, it can improve learning outcomes because it increases students' enthusiasm in

learning and can increase student empathy because they help each other (peer tutors). Another study by Fadhillah and Sofian (2023) that the use of wordwall media can increase learning interest and learning outcomes because it attracts students' enthusiasm by learning combined with games.

Based on the data and results of previous research, it shows that the think pair share model assisted by wordwall can be an alternative way to be able to create effective and enjoyable learning in learning mathematics so that it can improve math learning outcomes. In this case, think pair share learning can increase students' confidence because they can learn with their peers (peer tutors), and with the support of wordwall, it attracts students' enthusiasm in learning. The combination of the think pair share model and wordwall will get an interactive math learning environment, and stimulate student activeness in learning, and is expected to improve the quality of student math learning outcomes. Referring to the above problems, the purpose of this study is to determine the effect of think pair share learning assisted by wordwall on the mathematics learning outcomes of fifth grade students. The benefits of this research are that it is expected to contribute and input to the development of education, especially in the field of learning design in elementary schools, and can provide knowledge in the form of the importance of applying learning variations.

RESEARCH METHODOLOGY

This study used a quantitative research method of quasi experiment because it used two classes as subjects, namely the experimental class and the control class (Fadilla et al., n.d.). The purpose of this study was to determine whether or not there was an effect of the think pair share model assisted by wordwall on math learning outcomes. The research design used, namely two group pre- test- post-testt design using two classes as subjects. The first class was chosen as the control class with conventional learning and ordinary discussion, while the second class was the experimental class with the think pair share learning model assisted by wordwall. The research design is as follows :

Table 1. Treatment

Class	Initial Conditions	Treatment	Final Conditions
A	Pre-test	Conventional Learning with regular discussions	Post-Test
B	Pre-test	Wordwall-assisted think pair share learning	Post-Test

The research was conducted on fifth grade students in the second semester of the 2023/2024 academic year

at SDN Batu Ampar 02. The population in this research is all fifth grade students of SDN Batu Ampar 02, totaling 123 students per school year 2023/2024 as many as four classes. Meanwhile, the samples in this study were two classes with a total sample of 60 students, namely class V-A as a control class with a total of 30 students and class V-B as an experimental class with a total of 30 students. The sampling technique used uses non-random sampling techniques, namely by considering certain things tailored to the characteristics relevant to the research objectives.

In the data collection technique using test techniques, namely the initial test (pre-test) conducted before the treatment and the final test (post-test) after the treatment. The test form is anessay question consisting of 10 items to measure math learning outcomes. In the research instrument, a validation test was carried out using the Pearson correlation formula with the reference $r_{count} > r_{table}$. The questions that are declared valid will be used in further research, while invalid questions will be dropped or not included in the research. After conducting the validity test, the question instrument is continued by testing the reliability using the Cronbach alpha formula with the reference value must be greater than 0.6. The calculation of both tests was carried out using spss 29.0.0.0. and supported by validation by media experts (judgmental expert) with the following criteria :

Table 2. Expert validity data interpretation

No.	Interval	Practicality Criteria
1.	76%-100%	Good
2.	51%-75%	Pretty Good
3.	26%-50%	Not Good
4.	1%-25%	Bad

In the data analysis used in this research needs to go through the analysis requirements test, including the normality test with the *Kolmogorov-Smirnov* formula, and the homogeneity test with the reference sig value> 0.05. While in the hypothesis test, an independent t- test was used to see the average difference in results learning from two different groups of data with the decision making reference is the sig (2-tailed) value < 0.05. Calculation of tests using help of SPSS ver 29.0.0.0.

RESULTS AND DISCUSSION

Result

In the validity test the question item is declared valid if rcount> rtable. Based on the calculation of the validity test conducted using SPSS 29.0.0.0. against 29 students in grade V elementary school. The validity test results are as follows.

Table 3. Classification Item Validate

No	R_{count}	R_{table}	Keterangan
1	0.651	0.367	Valid
2	0.673	0.367	Valid
3	0.566	0.367	Valid
4	0.677	0.367	Valid
5	0.831	0.367	Valid
6	0.657	0.367	Valid
7	0.826	0.367	Valid
8	0.397	0.367	Valid
9	0.717	0.367	Valid
10	0.722	0.367	Valid

Referring to the data above, it was found that 10 items of math essay questions tested were valid, and 0 questions were invalid. So that researchers can use 10 essay questions as an instrument used to measure the mathematics learning outcomes of grade V students in research. Furthermore, the calculation of the reliability test is used to measure the level of consistency of an instrument when used under the same conditions but at different

times. The reference base is declared reliable if the alpha (α) value is greater than 0.6 (α> 0.06). The following are the results of the reliability calculation).

Table 3. Classification Item Validate

Nilai acuan	Nilai Alpha Cronbach	Description
0.6	0.862	Reliabel

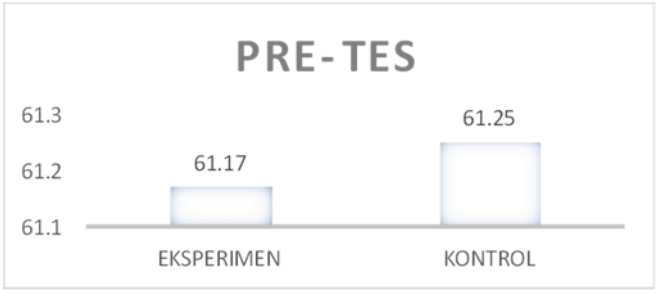
It is known in the reliability test table that the value of α = 0.862 is greater than 0.6. So, the test question instrument that was tested was declared reliable because the value of α> 0.60 (0.862> 0.60). Based on these data, it can be concluded that the question instrument is reliable and feasible to use. Furthermore, the media validation by media experts on the use of wordwall media with the interpretation of validity data as follows:

Table 5. Interpretation of Media Validation Data by Media Experts

No	Media Validity Assessment	Scores	Criterion
1.	Wordwall Device	93.75%	Good
2.	Design Aspects	75%	Pretty good
3.	Communicative	95%	Good
Overall Percentage		87.91%	Good

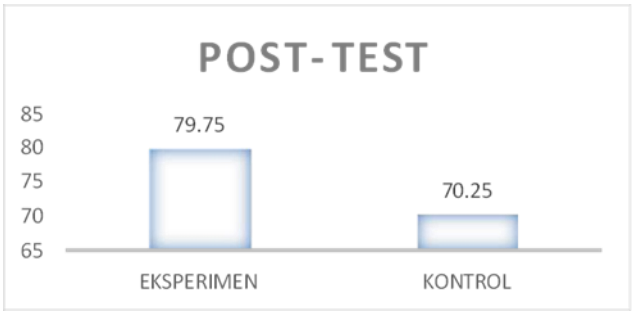
Referring to the interpretation of wordwall media validation data, the results of the overall percentage of 87.91% of this percentage fall into the good category. This shows that wordwall media can be a supporting medium that can improve the quality of the learning process. After fulfillment, validity and reliability tests researchers can use these 10 essay questions as valid and reliable research instruments and validity tests by media experts. Then the research continued by distributing pre- test questions, providing treatment, until the implementation of the post-test.

The research was continued to the intended sample of 30 students in the control class, and 30 students in the experimental class at SDN Batu Ampar 02 Pagi. The results of the data obtained before treatment (pre-test) and after treatment (post-test), as follows :



Picture 1. Data assessment pre-test

Based on the figure presented, it can be seen that there is an average difference that is not too far between the experimental class and the control class. When the control group pre-test obtained a slightly superior average of 61.25 with a standard deviation of 10.29, compared to the experimental group which obtained an average score of 61.17 with a standard deviation of 17.84. While the results obtained in the post-test scores obtained after the treatment of both the experimental and control classes obtained the following results :



Picture 1. Data assessment pre-test

In Figure 2 which presents the post- test assessment data, it can be seen that the experimental group got an average score of 79.75 with a standard deviation of 12.30 this value is far superior to the acquisition of the control group which only got an average score of 70.25 with a standard deviation of 11.60. This indicates that there is a significant difference in the average score after the treatment of the experimental class, namely learning using the think pair share model assisted by wordwall compared to the control class which only uses the conventional learning model. Thus, hypothesis testing can be done if the requirements of the analysis are completed, including normality test and homogeneity test.

The normality test is used to determine whether the data in the experimental and control class research is normally or abnormally distributed. The test uses the Kolmogorov-Smirnov formula with the following reference, 1) if the sig value <0.05 then the data is not normally distributed, 2) if the sig value> 0.05 then the data is normally distributed. The following are the results of the normality test for the experimental class and control class, as follows :

Tabel 6. Normality test

Class	Statistics	df	Sig.
Control Pretest	.142	30	.125
Postes Control	.125	30	.200
Pretes Experiments	.129	30	.200
Postes Experiments	.116	30	.200

Based on the table data above, it can be concluded that the normality test for the pre-test in the control class resulted in a significance (sig) value of 0.125, which is greater than 0.05 (0.125 > 0.05). In the experimental class, the significance value was 0.200, also greater than 0.05 (0.200 > 0.05). For the post-test in the control class, the sig value was 0.200, greater than 0.05 (0.200 > 0.05), and in the experimental class, the post-test yielded a sig value of 0.200 (0.200 > 0.05). Therefore, it can be concluded that the pre-test and post-test values in both the experimental and control classes have sig values > 0.05, indicating that both samples are normally distributed. After conducting the normality test and confirming that the data is normally distributed, the next step is the homogeneity test, which is used to determine whether the research data has the same or homogeneous variance, with the conclusion accepted if the sig value > 0.05. The homogeneity test results are as follows :

Table 7. Homogenity test

Description	df1	df2	Sig.
Based on mean	1	58	.641

Based on the homogeneity test table, the significance (sig) value obtained was 0.641 (0.641 > 0.05). This data indicates that the students who learned using the think- pair-share model assisted by Wordwall in the

experimental group and the students who learned through conventional methods in the control group are homogeneous. With both analysis prerequisites met, the calculation proceeds with hypothesis testing (t-test). The t-test (independent sample t-test) is a hypothesis test used to determine if there is a significant difference in the average learning outcomes between two distinct groups, namely, the experimental and control classes (Sugiyono, 2013). The test compared the post-test results of the experimental class, which used the think-pair-share model with Wordwall assistance, against the control class, which used conventional learning methods. The hypothesis can be concluded by referring to the decision criteria: 1) If the sig (2-tailed) value < 0.05, then H0 is rejected and Ha is accepted. 2) If the sig (2-tailed) value > 0.05, then H0 is accepted and Ha is rejected. The results of the t-test are as follows:

Table 8. Independent Sample T-test

Levene's Test for Equality of Variance					t-test for equality of Means
	F	Sig	T	df	Sig (2- d)
Equal variance assumed	.219	.641	3.076	58	.003
Equal variance not			3.076	57.800	.003

Referring to the t-test output above, the equal variance assumed section shows a sig (2-tailed) value of 0.003 (0.003 < 0.05). Based on this data, it can be concluded that there is a significant difference in the average mathematics learning outcomes between the experimental and control classes. According to the t-test decision-making criteria, this means that H1 is accepted and H0 is rejected. This indicates that there is a significant effect of the think- pair-share model assisted by Wordwall on the mathematics learning outcomes of fifth- grade students at SDN Batu Ampar 02.

Discussion

Learning outcomes are the final stage in the learning process and play a crucial role in observing students' progress and learning success. Through learning outcomes, teachers can decide on appropriate actions to ensure the learning objectives are met. Low mathematics learning outcomes can stem from a lack of tailored instructional models during the learning process. This misalignment can lead to a passive or unengaging learning environment, hindering students' ability to understand mathematics. Additionally, the perception that mathematics is difficult and intimidating often causes students to feel unfocused and less enthusiastic in the classroom. Therefore, it is essential for teachers to prepare thoroughly and choose models or media suited to the material, making learning more meaningful, which can gradually reduce the negative perceptions surrounding mathematics.

In this study, the researcher used the think-pair-share model supported by Wordwall to examine its impact on mathematics learning outcomes. The think- pair-share model is an innovative learning approach that gives students time to think, respond, and exchange information within a set timeframe. This model offers an alternative way to address the challenges in large groups by allowing students to exchange ideas with a partner, thus reducing their lack of confidence when struggling to understand the material. This method modifies traditional group discussions by promoting collaboration between pairs, giving students the chance to communicate and support each other's needs through think-pair-share.

In addition to encouraging independent thinking and sharing of knowledge with partners and other groups, the think-pair-share model emphasizes active student involvement in the learning process and boosts cooperation within small groups. Wordwall, a supportive media tool, complements the model by creating an enjoyable learning atmosphere. The integration of games into the learning process enhances students' interest and enjoyment, thereby maximizing their learning outcomes. This approach limits group discussions to pairs, allowing students to support each other and share knowledge as they work on solving the problems presented.

Previous research by Lidia Saingo, Vidriana Oktaviana Bano, and Yohana Ndjoeroemana (2023), titled *The Influence of the Cooperative Learning Model Think Pair Share (TPS) Assisted by Media on Learning Outcomes*, reported an average post-test score of 79.73 in the experimental class with media assistance, which was higher than the control class that only used lecture methods. This suggests that the issue of low mathematics learning outcomes due to insufficient use of models and media can be improved by applying a think-pair-share learning

approach with media assistance. Another relevant study by Cicik Juhairiyah, Sholahuddin Al Ayubi, and Tri Novita Irawati (2020), titled The Application of the Think Pair Share Learning Model to Improve Student Activity and Learning Outcomes, found that think-pair-share enhances student activity and learning outcomes, as students experience enjoyment and enthusiasm while solving problems in small groups. Furthermore, research by Ainur Rohmatun Nida and Denok Julianingsih (2023), titled The Influence of the Think Pair Share Learning Model on Student Learning Outcomes, indicated a difference between pre-test and post-test learning outcomes, with students becoming more active and confident during discussions when using the think-pair-share approach.

Drawing from these studies, this research explores *The Influence of the Think Pair Share Model Assisted by Wordwall on Mathematics Learning Outcomes of Fifth-Grade Students*. Field findings indicate that the increase in students' mathematics learning outcomes is influenced by the think-pair-share learning paradigm. This approach helps students develop critical thinking by encouraging them to understand problems independently while also being active and communicative in collaborative problem- solving. Think-pair-share tends to offer students the freedom to think comfortably without fear of answering questions, as they can validate their understanding with peers. Here, the teacher acts mainly as a facilitator, which enhances students' confidence in tackling provided problems.

In practice, the think-pair-share learning process begins with the teacher providing a concise explanation of the material, clearly outlining the objectives and rules for the learning model to be implemented. The teacher then assigns problems to be solved by students, using Wordwall as a stimulus. Students are given time to think independently and formulate answers to these problems. Afterward, they exchange insights on their answers and approaches with their seatmates. Finally, students are invited to present their final answers with their partners in front of the class.

In line with this, teachers fundamentally need guidelines for implementing the think-pair-share learning model. According to Yusuf & Wahdah (2023), the stages to consider include: 1) providing students with instructions about the learning model that will be applied, 2) allowing students time to think individually, 3) listening to any concerns students have regarding partner selection, 4) giving sufficient time for students to exchange ideas and opinions with their partner, and 5) appreciating all completed efforts. Following these guidelines can ensure that the think-pair-share learning model positively impacts learning outcomes.

Field research findings indicate an increase in average mathematics learning outcomes due to think-pair-share learning. Before treatment was administered in the experimental class, students scored an average pre-test result of 61.17, while on the post-test, they achieved 79.75, which is higher than the control class's average score of 70.25. The hypothesis test results yielded a sig (2-tailed) value of 0.003, which is less than 0.05 (0.003 < 0.05), leading to the rejection of H0 and acceptance of H1. This aligns with previous research by Saingo et al (2023), which reported that the experimental class using the cooperative think-pair-share model with media assistance achieved an average post-test score of 79.73, surpassing the control class's lecture-method score of 68.58.

From this research, it is concluded that the think-pair-share model assisted by Wordwall has a positive effect on the mathematics learning outcomes of fifth- grade students at SDN Batu Ampar 02 for the 2023/2024 academic year

CONCLUSION

Based on the previous discussion, it can be concluded that the think-pair-share learning model assisted by Wordwall has a positive effect on the mathematics learning outcomes of fifth-grade elementary students in the 2023/2024 academic year. Thus, the think-pair-share model and Wordwall learning media positively impact improving the mathematics learning outcomes of fifth-grade students at SDN Batu Ampar 02. This conclusion is supported by the average mathematics learning outcomes (post-test) in the experimental class, which scored 79.75, compared to the control class, which scored 70.25. The t-test (independent sample t-test) results also show a sig (2-tailed) value of 0.003, which is less than 0.05 (0.003 < 0.05). Therefore, Ha is accepted, indicating a significant difference in the average mathematics learning outcomes between the experimental and control classes.

Suggestions

To support and improve the learning process, the following suggestions are recommended:

1) For teachers, it is essential to adapt the selection of teaching models to the learning material so that the learning process aligns with the educational objectives.

2) For future researchers, it is advisable to develop studies with innovative approaches, thoroughly prepare materials and evaluation questions, and manage time effectively to maximize sessions for grouping, individual thinking, discussion, and sharing without running out of time.

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