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The Use of Monopoly Media to Improve Primary Student's Critical Thinking Skills in Science Learning

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Abstract

The purpose of this research was to investigate the difference improvement of critical thinking skills by using inquiry model assisted with monopoly media with direct instruction learning model in Primry Schools. The method used in this research was a type of quantitative research methods especially Non equivalent of pre-test and post-test control group design was used with 77 students as the research subjects of Diponegoro distric at Sempor Kebumen. The data collection techniques used were test, interviews, observation. The results of the present research showed that the critical thinking skills of students by using inquiry model assisted with monopoly media is better than those taught by direct instruction learning model and the result of the t-test obtained significance value of 0.003 < 0.05. The percentage of critical value of subject matter of Science Learning based on students worksheets (LKS) and experiments for high critical criteria are 13.88%, critical criteria 66.67%, moderate critical criteria 19.44%. Then, the average final scores of students in the experimental class was 80.52% and the control class was 74.63%, While the stage of average critical thinking was at the level 4 which is to formulate arguments and determine the outcome of the consideration by the integration between initial concept and experiment. Therefore, it can be concluded that the use of inquiry model assisted with monopoly media is more effective used than that of direct instruction learning model.

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INTRODUCTION

The theme based learning in elementary school become an important learning carried out primarily in shaping cognitive about events in a review of a range of disciplines and useful for forming the attitudes and skills (Permendikbud No. 22 of 2016).

Theme based learning have an important role for the development of the human brain in learning. The essence of learning is not only on books and reading material that is ready to use, but also developed by regarding the student to environment as context and requires think students to of the various reviews of subject matter. It can also be said that in the theme based learning do not demanding the teacher as a transmitter of the main sources of knowledge. Rather than a fasilitator The impact of theme based learning will provide meaningfull learning (Utari, et al. 2016).

The theme based learning in this research was focused on science learning. Science learning is important since the learning more about, facts, concepts, principles in real life (Hosnan, 2014).

According to Koballa (2010) to science learning is described four dimensions, namely science as a way of thinking, science as a way of inquiry, science as a body of knowledge, and as a science and technology. According to the results of TIMSS, Score Science Learning of Indonesia was at 45th rank out of 48 countries, and this result indicated that the student ability of science learning is still unstatisfied

Based on the observation conducted previously, the average score of completeness of science learning in SD Negeri 1 Sidoharum is reached 57.14%. Meanwhile, the results of interview conducted with the teachers SD Negeri 2 Sidoharum distric of Sempor it was obtained information that the students' cognitive abilities and the ability to ask or answer questions on the activities of apperception was not statisfy

Core activities and the final activity of learning does not appear in the classical style only a few children who can connect well to the teacher during a lesson. Such findings allowing research to deepen the scientific disciplines of science learning in elementary school. The initial stage of the research was in the form of interviews conducted to the teachers of SD Negeri 2 Selokerto and SD Negeri 1 Sidoharum in Kebumen. The results showed that the theme based learning activities have been run well. However, the character subload that showed in science learning was having problems in the character of confidence toward his or her work and the ability to respond to the question independently, both orally and written. Character of responsibility for prestice of academic.

Attempt was made in the form of training for teachers, Actually student's didn't have confidance in discussions and learning. They are still hung up on a few people who are active, when given an inducement question for all students in fact only a few students who are always active in answering and asking, but the quality unstatisfied.

The result of observation also noted the fact that the teaching system of the teacher is in conformity with the mandate of the learning curriculum of 2013 which is the learning of investigation, however, the result of the achievement just 50% for standard. Activities to prove the existence of the problem conducted by interviewing students and the results can be seen from the narrative of the students that the discussion ever done.

The result of descussion do not make sure to dare to argue, after the teacher asks a lot who do not understand the concept of learning and still many of them afraid to ask questions. The quality of answers of students who have courage to deliver answer still does not match the correct answers.

Thus, in this research, it can be concluded that the students' critical thinking skills are still low. Critical thinking in favor of practice in the curriculum learning of 2013, particularly scince learning related to activities on sorting out a concept derived from a proof to determine its own conclusions (Lastriningsih, 2017).

The variety of learning activities for critical thinking skills can be carried out through interactive learning models by actively involving teachers and students (Zulhelmi, et al. 2017). On

of the most effectively model for intercative learning is inquiry (Sochibin, et al. 2009). Media that can be used also becomes a guided in increasing critical thinking skills, namely media monopoly (Suciati, et al. 2015).

Media monopoly has a good impact on activities to maximize the ability of individuals and groups to discover the concepts and facts of an event. Furthermore, according to Purwanto, et al. (2012) expose the implementation of Monopoly media can enhance critical thinking skills of physics subject in junior high school.

Davidi (2018) supported evidence that monopoly based Problem Based Learning can improve students' critical thinking skills. Monopoly learning media provide an instruction students to learn independently through several commands in the media, or it can also be a bridge to prove the concepts that students have with what they find in reality.

Learning activities by using the monopoly media assisted with inquiry model provides an activity of observing learning videos and proving existing concepts from experiments so that the learning becomes more meaningful, since there is a process of seeking knowledge (Budiyono & Hartini, 2016). The following Figure 2 is the monopoly design.

Figure 2. Design of Monopoly

Existing facts are supported by several studies related to the monopoly media assisted inquiry learning model as ever applied by Fatimah & Wangid (2018). The media monopoly based on scientific pproach can improve the ability to think critically of elementary school students to be the reason why this research. The media wich expose theme based learning and used Audio-Visual can be used for 4th grade learning. The media that combined with games in the theme based learning is providing student's to think efficiently and competition

Based on the background that underlies the various problems found in observations and interviews, researchers with teachers can conclude that the main problems referring to the lack of critical thinking skills of grade IV students are caused by many factors from students and teachers. The potential to maximize the learning model is not yet fully effective. Researchers try to overcome this by using a more interactive inquiry learning model with media monopoly.

METHODS

The type of this research was an experimental research. This research applied quasi experimental design types The Non equivalent pre-test post-test control group design by using inquiry learning model assisted with media monopoly. In the experimental class by using Direct instruction learning model in the control class. The population used was grade IV SD Negeri 2 Selokerto and SD Negeri 1 Sidoharum academic year 2017/2018 academic on the theme of *Varians of Culture in Indonesia*

The variables measured include critical thinking skills. The data collection technique was done by using essay test for pre-test and post-test, LKS and experimental observation sheet.

The development of other HOTS skills is students' critical thinking skills which are taught through inquiry learning in the form of modules and worksheets that are used can be used as a means of helping learning (Budiarti, et al. 2016).

The data collection instrument used include interviews sheet, observation sheets which has function to support first analysis of the problems on critical thinking skills, based on the results of interviews teachers to conclude that the success model must be combined with media. The subject and population determination

technique used was random sampling. The activity to test the research instrument needs to be carried out by prerequisite testing in the form of data normality test and data homogeneity. The purpose of knowing the existence of a normal and homogeneous population.

Prerequisites Test Research

Normality Test Data

Data normality test was used to determine the distribution of population data from a research with normal distribution and feasible to be used as preliminary conditions for conducting research. The normality test of the research data comes from the pre-test data. If the data is said to be normal, then further testing is needed to determine the feasibility of the population in the research.

Homogeneity Test

The homogeneity test of the research was showed how well the data distribution in the population experienced homogeneous values and the data could be used for research. The results of normality of critical thinking ability by using pre-test data is presented at Tabel 1.

Table 1. The Results of Distribution of Normality and Homogeneity of The Data Pre-Test

Type	Result	Sig	Conclusion
Normality	0.20	> 0.05	Normal data
Homogeneity	0.85	> 0.05	Data homogeneous

The distribution of data listed in Table 1 indicates a normality value that reaches > 0.05 with the results of 0.200 the distribution of existing data is normal. The value of the data homogeneity is 0.854 reaching more than 0.05, so that the data is classified as homogeneous data or suitable for the research.

RESULTS AND DISCUSSION

Data from the discussion of the research activities carried out using the control class using the direct instruction model and the Experimental class that uses the monopoly media assisted inquiry learning model explains that the effectiveness of better learning is dominated by using the media-monopoly inquiry-assisted learning model. These results can be seen in Table 2.

Table 2. The Results of Pre-Test Science Learning

Class	Students	Min	Max	Mean
Ex	36	58	87	71.69
Control	41	55	94	71.46

In Table 2 above, it can be seen the pre-test scores that are quite good compared to the completeness values that existed last year as the initial ability standard of students. These results can be understood that there is an initial understanding of good material from students. The results of the improvement that occur will be displayed through the results of the post-test in Table 3 of the post-test Results.

Table 3. The Results of Post-Test Science Learning

Class	Students	Min	Max	Mean
Ex	36	57	95	81.3
Control	41	63	95	73.7

Table 3 describes the existence of a post-test score from learning using the media-monopoly-assisted inquiry model. The difference from the pre-test and post-test values of the experimental and control classes for the experimental class 9.61 and control class 2.32. So that there is an increase in learning by using inquiry learning models assisted with media monopoly compared to direct instruction learning models in grade IV elementary school with a significance value of 0.003 wich is higher than 0.005.

The results are obtained from the difference in post-test scores and pre-tests on learning. Learning activities with Monopoly media are more effective, because students are emphasized to do learning activities related to critical thinking skills well. Students doing the practicum must be more active in learning in order to follow the rules of the game on the existing media. The following is shown in Figure 3 shows the implementation of learning by using media monopoly.

Figure 3. The Learning Activities by Using The Media Monopoly

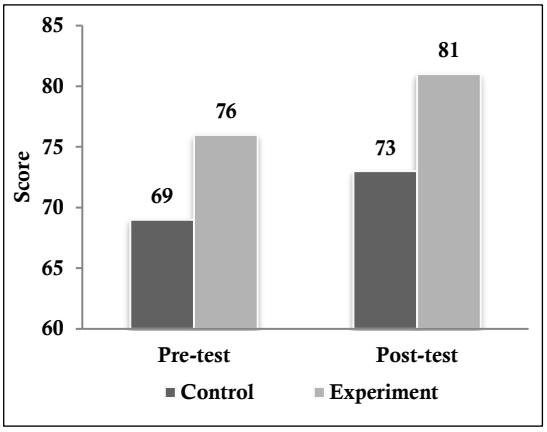

Figure 4. The Result of Improvement in The Achievement of Students' Critical Thinking Skill

Research Testing

Classical Completeness

The learning of inquiry models assisted with monopoly media has a better impact on improving academic achievement than learning by using the direct instruction model which has lower results. Based on the conclusions from the results of the research, the reception area (H_0) was rejected and (H_a) was received with a sign of significance (2-tailed) which showed a number below 0.05, which was 0.003, so that a difference of learning model using media monopoly assisted inquiry with direct instruction learning model occurred.

Classical completeness in the experimental class produces a calculated z value of 2.167 ≥ z (0.5- a) of z (0.45) which is 1.64 so that H_0 is rejected and Ha is accepted, therefore, it can be concluded that the inquiry learning model assisted with monopoly media has achieved classical completeness by 80%. The results of the increase in the average score is explained in the following Figure 4.

The Average Difference Test

The results of the two different average test indicated that there is a t_{value} for significant 2-tailed 0.003 < 0.005. H_a is accepted, therefore, it is concluded that there is a difference of average between the experimental classes by using inquiry learning model assisted with the monopoly media and the direct instruction model.

Table 4. Table Result of The Average Difference Test

Class	t_{table}	t_{value}
Experiment	1.64	2.10
Control		

The calculation result of the Z_{value} is greater than the Z_{tabel} so that the classical completeness value is obtained. The level of confidence in inquiry learning seen from the results of increasing the value of post-test and pre-test by using the N-gain value obtained the following results.

Table 5. The Results of N-gain Achievement

Class	Pre-test	Post test	N-gain	Explanation
Experiment	71.6	81.9	0.34	Moderate
Control	71.4	73.7	0.07	Low

Based on Table 5, the N-gain results in data for the experiment class obtaining a value of 0.34 with the medium gain criteria. Inquiry learning conducted at SD Negeri 2 Selokerto and SD Negeri 1 Sidoharum, Sempor, Kebumen, can improve elementary students' critical thinking skills and student learning independence.

Furthermore, as explained by Kitot, et al. (2010) for inquiry learning has an effect in improving critical thinking skills. Inquiry learning can improve critical thinking skills as explained by Ningsih, et al. (2012). The results of his research show that inquiry-based learning (Process Oriented Inqury Learning) or commonly called POGIL is more effective in improving the

critical thinking skills of junior high school students.

Based on the results of student work, it showed a very simple answer given by students. Figure 5 shows the results of the posttest in formulaty hypothesis.

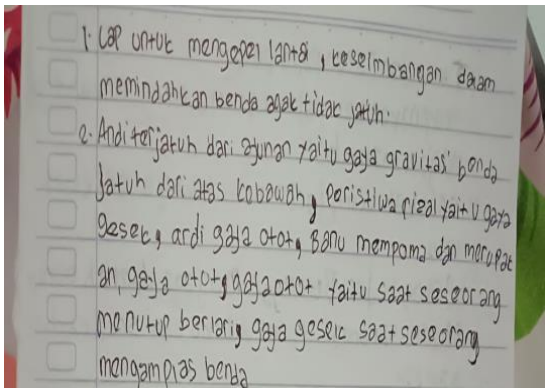

Figure 5. Student Work Post-test

The result of student work showed the fact that students 'critical thinking ability seen from the students' answers as follows:

"*Lap untuk mengepel, dan memindahkan benda agar tidak jatuh* (cloth make the chair isn't falling down)". The fact of the students' answers delivered on the question that asks the students about the benefits of cloth on the activities of moving objects.

It indicated that the critical thinking skills that occur is still achive step the give of the reason or simple opinion. They must be combined the concept with his opinion in the next level. Based on the answers of students, they can only achieve 3 correct points answer with level 3.

The activity of inquiry is described at several stages, namely hypothesizing, analyzing and concluding. Inquiry learning can also be used to improve a high-level thinking skills as described in one of journal written by Purnamasari, et al. (2017) which statted that inquiry based worksheets function to develop high level skills.

The ability to think critically is basically a skill that is interrelated in inquiry learning, but other skills that can be used for inquiry in learning are the form of problem solving (Early, et al. 2018). One of the researcher tried to offer solutions to problems is being media monopoly assisted inquiry learning that can improve critical thinking skills. Windarti, et al. (2018) explains that critical thinking skills and learning outcomes can be improved through discovery learning models in fourth grade elementary school.

The research is not effective by applying the discovery learning model to critical thinking skills while for solutions to problems can be offered through inquiry learning, both from the basic to the student level critical thinking skills can be effectively increased (Sarwi, et al. 2012).

The inquiry model is a learning model embodied in Permendikbud Number 22 of 2016 as learning that applies evidence. Inquiry learning is more effective when done with the concept of guidance (Kurniawati, et al. 2014).

Media solutions as a combination of theme based learning in elementary school can be done using a monopoly board game to manage theme based learning (Setyaningsih & Dewi, 2015). Monopoly can be used as a medium to improve critical thinking skills (Nadjah and Widiatmoko, 2015).

Monopoly can be used to improve student learning independence (Suciati, et al. 2015). Monopoly can be used to increase student learning independence (Suciati, et al. 2015). Monopoly as a theme based learning media is very suitable in improving learning outcomes since it can be used for learning by using the Scientific approach at the junior high school level (Vikagustanti, et. al. 2014).

The difference offered from this research is the use of inquiry learning models to improve the critical thinking skills of elementary school students in science subjects.

CONCLUSION

Based on the result of the research, it can be concluded that the use of inquiry learning model assisted with monopoly media is more effectivelly. Than that's of models direct instruction learning model to improve critical thinking skills of elementary school students on science learning subjects.

REFERENCES

Budiarti, S., Nuswowati, M. & Cahyono, E. (2016). Guided Inquiry Berbantuan E-Modul untuk Meningkatkan Keterampilan Berpikir Kritis. *Journal of Innovative Science Education,* 5(2), 144-151. Retrieved from https://journal.unnes.ac.id/sju/index.php/jise/article/view/14264

Budiyono, A & Hartini. (2016). Pengaruh Model Pembelajaran Inkuiri Terbimbing terhadap Keterampilan Proses Sains Siswa SMA. *Wacana Didaktika Jurnal Pemikiran Penelitian Pendidikan dan Sains,* 4(2), 141-149. Retrieved from http://download.portalgaruda.org/article.php?article=498748&val=10220&title=pengaruh%20model%20pembelajaran%20inkuiri%20terbimbing%20terhadap%20keterampilan%20proses%20sains%20siswa%20sma

Vikagustanti, D. A., Sudarmin., & Palmerasari, S. D. Pengembangan Media Pembelajaran Monopoli IPA Tema Organisasi Kehidupan sebagai Sumber Belajar untuk Siswa SMP. *Unnes Science Educational Journal,* 3(2), 468-475. Retrieved from https://journal.unnes.ac.id/sju/index.php/usej/article/view/3330

Davidi, E. I. N. (2018). A Monopoly-Game Based On Problem-Based Learning to Increase Critical Thinking Skill. *Jurnal Pendidikan dan Kebudayaan Missio*, 10(1). Retrieved from http://ejournal.stkipsantupaulus.ac.id/index.php/jpkm/article/view/165

Early, O. A., Winarti, E. R., & Supriyono. (2018). Analisis Kemampuan Beprikir Kritis Matematis Ditinjau dari Kemandirian Siswa Kelas VIII melalui Pembelajaran Model PBL Pendekatan Saintifik Berbantuan Fun Pict. *PRISMA, Prosiding Seminar Nasional Matematika*, (1), 388-399. Retrieved from https://journal.unnes.ac.id/sju/index.php/prisma/article/view/19609

Fatimah & Wangid. (2016). Media Pembelajaran Matematika Berbasis *Scientific Approach* untuk Sekolah Dasar. *Jurnal Riset Pendidikan Matematika*, 3(1), 1-10.

Kitot, A. K. A., Ahmad, A. R., & Seman, A. A. (2010). The Effectiveness Inquiry Teaching in Enhancing Students Critical Thinking. *Procedia Social and Behavioral Sciences*, 7(C), 264-273. https://core.ac.uk/download/pdf/82786301.pdf

Kurniawati, I. D., Wartono, & Dinatoro, M. (2014). Pengaruh Pembelajaran Inkuiri Terbimbing Integrasi Perr Instruction terhadap Penguasaan Konsep dan Kemamuan Berpikir Kritis Siswa. *Jurnal Pendidikan Fisika Indonesia,* 10(2), 36-46. Retrieved from https://journal.unnes.ac.id/nju/index.php/JPFI/article/view/3049

Lastriningsih. (2017). Peningkatan Berpikir Kritis Dan Prestasi Belajar melalui Metode Inquiry pada Siswa Kelas IV SD. *Jurnal Prima Edukasia*, 5(1), 68-78. Retrieved from https://journal.uny.ac.id/index.php/jpe/article/view/7714

Ningsih, S. M., S. Bambang, & Sopyan, S. A. (2012). Implementasi Model Pembelajaran *Process Oriented Guided Inquiry Learning* (POGIL) untuk Meningkatkan Kemampuan Berpikir Kritis Siswa. *Unnes Physic Education Journal*, 1(2), 45-52. Retrieved from https://journal.unnes.ac.id/sju/index.php/upej/article/view/1364

Purwanto, Sari, I. M., Husna, H. N (2012). Implementasi Permainan Monopoli Fisika Sebagai Media Pembelajaran dalam Pembelajaran Kooperatif Tipe TGT untuk Meningkatkan Prestasi Belajar dan Mengetahui Profil Kemampuan Beprikir Kiritis Siswa SMP. *Jurnal Pengajaran MIPA,* 17(1), 69-76. http://journal.fpmipa.upi.edu/index.php/jpmipa/article/view/241

Permendikbud. (2016). *Standar Proses Pendidikan Dasar dan Menengah*. Jakarta: Kemendikbud.

Purnamasari, D., Ertikanto, C., & Suyanta, A. (2017). Keefektifan Lembar Kerja Siswa Berbasis Inkuiri untuk Menumbuhkan Keterampilan Berpikir Tingkat Tinggi. *Jurnal Ilmiah Fisika Al-BiruNi*, 6(2), 209-219. Retrieved from http://ejournal.radenintan.ac.id/index.php/al-biruni/article/view/2070

Sarwi, Rusilowati, A., & Khanafiyah, S. (2012). Implementasi Model Eksperimen Gelombang *Open-Inquiry* untuk Mengembangkan Keterampilan Berpikir Kritis Mahasiswa Fisika. *Jurnal Pendidikan Fisika Indonesia*, 8(1), 41-50. Retrieved from https://journal.unnes.ac.id/nju/index.php/JPFI/article/view/1993

Setyaningsih, M. D & Dewi, N. R. (2015). Pengembangan Media Papan Permainan Berbasis Science Edutainment Tema Makanan Untuk Siswa Kelas VIII. *Unnes Science Education Journal*, 4(3), 965-972. Retrieved from

https://journal.unnes.ac.id/sju/index.php/usej/article/view/8842

Sochibin, A., Dwijananti, P., & Marwoto, P. (2009). Penerapan Model Pembelajaran Inkuiri Terpimpin untuk Peningkatan Pemahaman dan Keterampilan Berpikir Kritis Siswa SD. *Jurnal Pendidikan Fisika*, 5(2), 96-101. Retrieved from https://journal.unnes.ac.id/nju/index.php/JPFI/article/view/1017

Suciati, S., Septiana, I., & Untari, M. F. A. (2015). Penerapan Media Manosa (Monopoli Bahasa) Berbasis Kemandirian dalam Pembelajaran di Sekolah Dasar, *E-Journal UPI*, 2(2), 178-192. Retrieved from http://ejournal.upi.edu/index.php/mimbar/article/view/1328

Utari, U., Degeng, I. N. S., & Akbar, S. (2016). Pembelajaran Tematik Berbasis Kearifan Lokal di Sekolah Dasar dalam Menghadapi Masyarakat Ekonomi Asean (MEA). *Jurnal Teori dan Praksis Pembelajaran IPS*, 1(1), 39-44. Retrieved from http://journal.um.ac.id/index.php/jtppips/article/view/586

Windarti, Y., Slameto, Widyanti, E. S. (2018). Peningkatan Kemampuan Berpikir Kritis dan Hasil Belajar melalui Penerapan Model *Discovery Learning* dalam Pembelajaran Tematik Kelas 4 SD. *Jurnal Pendidikan Berkarakter,* 1(1), 150-155. Retrieved from http://journal.ummat.ac.id/index.php/pendekar/article/view/353

Yanti, O. F., & Prahmana, R. C. I. (2017). Model Model *Problem Based Learning*, *Guided Inquiry*, dan Kemampuan Berpikir Kritis Matematis. *Jurnal Review Pembelajaran Matematika,* 2(2), 121-130. Retrieved from http://jrpm.uinsby.ac.id/index.php/jrpm/article/view/43

Zulhelmi, Adlim, & Mahidin. (2017). Pengaruh Media Pembelajaran Interaktif terhadap Peningkatan Keterampilan Bepikir Kritis Siswa. *Jurnal Pendidikan Sains Indonesia*, 5(1), 72-80. Retrieved from http://www.jurnal.unsyiah.ac.id/JPSI/article/view/8414