

EFFECT OF COOPERATIVE LEARNING MODEL NUMBERED HEADS TOGETHER (NHT) USING MACROMEDIA FLASH AND POWERPOINT ON ECONOMIC LEARNING ACHIEVEMENT IN SOCIAL STUDIES

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ABSTRACT

This research aimed to determine: the effect of applying cooperative learning model type NHT (Numbered Heads Together) with Macromedia Flash and Power point on the economic learning achievement of students of XI Social Class in SMA Negeri 11 Semarang. This research is an experimental research, with pre-test post-test control design. The population in this study includes all students of XI Social Studies Class. Samples were taken by random sampling technique obtained by two sample class, named experiment class and control class. The data collection technique used is by test instrument. The data obtained were then analyzed using statistical tests including normality test, homogeneity test, and hypothesis test. Hypothesis testing using Paired Sample t Test and Independent Sample t Test. Based on the final stages of testing, the data were normally distributed $0,730 > (0,05)$ and homogeneous $(0,530 > 0,05)$. Hypothesis test results showed that cooperative learning model type NHT with Macromedia Flash and Power point has a significant effect and can improve economic learning achievement. In the experimental group using cooperative learning NHT with Macromedia Flash has increased from an average pretest score of 72.34 to 89.35 on the average value posttest. In the control class is also an increase in the average value of pretest 72.57 to 80.23 on the average post-test score.

KEYWORDS Cooperative Learning Method, Numbered Heads Together, Learning Achievement.



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INTRODUCTION

Education is a conscious effort undertaken by families, communities and governments through life-long guidance, instructional, and lifelong training to prepare learners in order to play a role in various living environments permanently for the foreseeable future (Lee, Cheung, & Li, 2019; Malik, 2018; Mialiawati, 2020). Education can be successfully and efficiently if the educational goals set have been achieved (Aspin & Chapman, 2017). One of the goals of education is to realize the learning so that learners are actively developing the potential within. One of the factors that influence learners in developing their potential is the methods and learning media that used in teaching and learning process. Global demands have changed the learning paradigm from the traditional learning paradigm to the new learning paradigm (Mulyasana, 2011).

Learning method in this era of globalization has a very significant influence on the learning patterns that are able to empower the learners (Avis, Fisher, & Thompson, 2018; Makumane & Khoza, 2020; Reimers & Chung, 2019; Terziev, 2019). Methods are important factors that affect student achievement. Methods of active and interactive learning can encourage students to compete so expect student achievement will be higher (Tu'u, 2014). Based on preliminary observations in SMA Negeri 11 Semarang known that economic learning achievement in social class is still relatively low with an average of only 45% of student mastery of the criteria specified school is 80% (based on school rules). Teachers have not yet applied varied learning methods. In addition to lectures, the usual strategy is to enable students with classroom discussion. In reality, however, this strategy has not been effective because although teachers have encouraged students to be active in discussions, most students simply remain silent as spectators while the classroom is controlled by only a few students. The concept of learning is basically centered on teachers while students receive passive learning, so the activity students in less learning are built. The low activity of the students to this economic learning has an impact on student achievement. From here it must be designed and built the classroom atmosphere in such a way, so that students get a chance to interact with each other. Cooperative learning model is one of the learning model that can improve cooperation and interaction among students

Cooperative learning is a learning that can be applied to enhance student cooperation and interaction. The method in cooperative learning is to group students in the classroom into a small group so that students can work with their maximum abilities and learn from each other in groups.

Table 1. Steps of Cooperative Learning Method

Phases	Master's Behavior
Phase 1: Present Goals and set	Describe the learning objectives and prepare the learners to be ready to learn

Deliver goals and prepare learners	
Phase 2: Present Information Presenting information	Present information to learners by way of demonstration or through reading material
Phase 3: Organize Student into learning teams Organize learners into learning teams	Provide explanations to learners about how teams are formed and help groups to transition efficiently
Phase 4: Assist team work and study Helps teamwork and learning	Help teams learn as long as learners do their work
Phase 5: Test on the material Evaluate	Testing learners' knowledge about various learning materials or groups present their learning outcomes
Phase 6: Provide Recognition Giving recognition or appreciation	Prepare ways to acknowledge individual and group efforts and presentations

(Suprijono, 2011)

One of cooperative learning model developed at this time is a constructivist learning-oriented which is cooperative learning with variations Numbered Heads Together (NHT). The cooperative learning method Numbered Heads Together (NHT) was first developed by Spencer and Kagan in 1993 to engage more students in examining the materials covered in a lesson and measuring understanding of the content of the lesson. the cooperative learning NHT is one type of cooperative learning that emphasizes in special structures designed to affect the pattern of interaction of students and has a goal to improve the mastery academic. Numbered Heads Together (NHT) is a type of cooperative learning that provides students to exchange ideas and consider the right answer (Lie, 2014). The NHT learning model indirectly trains students to share information, listen carefully and speak with full calculation, so that students are more productive in learning. NHT learning method is a method of student-centered learning, takes place in the form of cooperation or collaborative, student-teacher interaction in the form of exchange of information and emphasis on critical thinking and decision making are supported by information resulting from the process of discussion.

Methods that are collaborated with learning media make teaching and learning activities more active, effective, and interesting. The implementation of an interesting learning methods and supported by instructional media utilization is expected to improve the achievement of learners (Malik and Agarwal, 2012). The word media comes from the Latin and is the plural of the word medium which

literally means intermediary or introduction. media is something that can be used to channel messages (learning materials), stimulate thoughts, feelings of attention and ability of students, so that the learning process occurs (Sadiman et al, 2012). The benefits of instructional media such as learning becomes more interesting, the clarity and demands of the message, the fickle image appeal, the use of special effects that can cause curiosity so that students feel happy in thinking, all of which show that the media has aspects of motivation and increase interest in learning (Arsyad, 2013). One of the media that can be used in the delivery of learning materials is Macromedia Flash and Powerpoint. A Power Point presentation is a complex mixture of text, graphics, explanations, advanced software features and real-time interaction with the audience. PowerPoint to present the course content in a clearer and better organized way, and to provide the opportunity, at any time, to review basic points that they may have missed during the course (Uz, Orhan, Bilgic, 2010). Macromedia Flash is a powerful development tool that offers tremendous capabilities. Until recently, developers mostly utilized Flash's strengths to create complex animations or fast-loading movies. Some new, cutting-edge applications have demonstrated Flash's potential to surpass the power of traditional software applications. These web applications leverage the strengths of Flash to help users make better sense of large amounts of data, presenting information in an easily accessible, graphical visual representation (Perfetty and Spool, 2012).

The existence of interesting learning methods and supported by the use of learning media is expected to improve student learning achievement. The learning achievement in education is the result of the measurement of the student which includes factors of cognitive, affective, and psychomotor after following the learning process which is measured using a test instrument or instruments relevant tests. Learning achievement is the measurement result of the learning effort assessment expressed in the form of symbols, letters, and sentences that describe the results achieved by each child in a certain period (Hamdani, 2011). While the learning achievement is the mastery of knowledge or skills developed by the subjects that indicated by the value of tests or numbers provided by the teacher.

Based on the background described above, Starting from the background described above, then the problem formulation in this research is as follows: (1) whether the method of cooperative NHT with Macromedia Flash can improve student's economic learning achievement? (2) whether the cooperative method of NHT with Macromedia Flash can improve student learning achievement higher than cooperative method of NHT with Powerpoint? The purpose of this research is to find out whether the application of interactive learning media macromedia flash can improve student's economic learning achievement. students are expected to be directly involved to interact with the subject matter through an interesting learning media so as to improve their learning achievement.

Learning achievement in economics at SMA Negeri 11 Semarang remains below expectations, with only 45% of students meeting the school's minimum mastery criteria of 80%. Traditional lecture-based teaching methods and ineffective classroom discussions have resulted in passive student engagement, limiting opportunities for interaction and deeper understanding of economic concepts. Most students remain observers while only a few dominate classroom discussions, indicating the need for more interactive and inclusive teaching strategies.

Moreover, the integration of instructional media in learning has been minimal. Although digital tools such as PowerPoint are occasionally used, they are not sufficiently engaging or interactive to capture students' interest. There is a clear need for innovative approaches that not only involve students actively but also accommodate different learning styles through visual and interactive media. This study explores whether combining the cooperative learning model NHT (Numbered Heads Together) with media tools such as Macromedia Flash and PowerPoint can significantly improve learning outcomes.

As digital literacy and student engagement become essential components of modern education, it is critical to identify teaching models that integrate technology effectively. The urgency of this research lies in addressing low student achievement through an instructional redesign that incorporates both cooperative learning and multimedia. With schools shifting toward more student-centered learning environments, educators must adopt innovative strategies that enhance both engagement and academic performance.

Previous studies support the use of cooperative learning to improve student outcomes. Suprijono (2011) and Lie (2014) emphasized that cooperative models like NHT foster active participation, collaboration, and critical thinking among students. NHT, in particular, has been effective in breaking the dominance of certain students and encouraging broader class involvement.

Multimedia learning tools, such as Macromedia Flash and PowerPoint, have also been shown to enhance comprehension and retention. Malik and Agarwal (2012) found that interactive visuals and animations increase learner motivation and accommodate diverse learning styles. Similarly, Uz, Orhan, and Bilgic (2010) reported that PowerPoint presentations help clarify and reinforce course material when used appropriately.

Furthermore, Arsyad (2013) and Sadiman et al. (2012) emphasized the motivational aspect of learning media, showing that students are more engaged when lessons are visually stimulating and dynamic. These studies underscore the value of combining cooperative methods with multimedia tools to create a more immersive and effective learning experience.

While prior research has validated both the effectiveness of cooperative learning models and the benefits of multimedia tools, few studies have investigated

the combined effect of the NHT model with specific digital media like Macromedia Flash in high school economics classes. Additionally, comparative studies assessing the differential impact of using Flash versus PowerPoint within the same cooperative framework remain limited. This study fills that gap by directly comparing learning outcomes between students taught using NHT with Flash and those taught using NHT with PowerPoint.

The novelty of this study lies in its experimental design that directly compares the use of two digital media—Macromedia Flash and PowerPoint—within the same cooperative learning framework (NHT). Unlike previous studies that examine these tools independently, this research investigates which combination yields better student learning outcomes in economics education. By integrating technology with an interactive learning model, the study provides new insights into the optimal use of media in collaborative classroom environments.

The objective of this study is to determine whether the implementation of the Numbered Heads Together (NHT) cooperative learning model using Macromedia Flash improves students' economic learning achievement more significantly than using NHT with PowerPoint. The study also aims to assess the overall effectiveness of multimedia-supported cooperative learning in enhancing student engagement and mastery in economics.

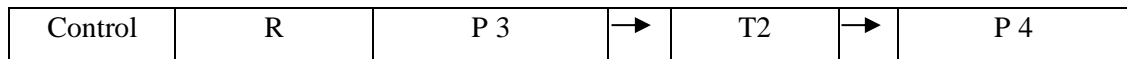
This research provides educators and curriculum developers with evidence-based guidance on using interactive media in cooperative learning settings. The results can help teachers select the most effective media tools for their subjects, particularly in economics. Additionally, the findings support school administrators in integrating technology into teaching practices to boost learning achievement. More broadly, the study contributes to educational innovation by highlighting the synergistic effect of instructional methods and media on student outcomes.

RESEARCH METHOD

Research used in this case is an experimental research. The population in this study were all students of XI social class SMA Negeri 11 Semarang which then taken random sample of 2 classes (simple random sampling) named the experimental class and control class. The design used in this study is the experimental design pretest-posttest control group design.

Table2. Design pretest-posttest control group

Group	randomization	Measurement Before Treatment	→	Giving Treatment (X)	→	Measurement After Treatment (Y)
Experiment	R	P 1	→	T1	→	P 2



(Jogiyanto, 2018)

Information:

T1 : Treatment using cooperative learning model NHT with Macromedia Flash

T2 : Treatment using cooperative learning model NHTwith Powerpoint

→ : The direction of the treatments effect

P 1 : Pretest value of the experimental group

P 2 : Posttest value of the experimental group

P 3 : Pretest value of control group

P 4 : Posttest value of the control group

Treatments effects on experimental class that is $(P2 - P1)$ and the effect on the control class is $(P4 - P3)$. The net effect of the experiment is $(P2 - P1) - (P4 - P3)$.

Data collection techniques in this study are Documentation and Test. In this study the documentation is used to collect data that is written i.e student identity data and recap student value and type of test used is pretestand posttest.

Paired Sample T Test was conducted to determine whether there is an average increase learning achievement between groups of samples. In this case the samples of the experimental group who experienced two different treatments, namely before the applied method NHT with Macromedia Flash and Powerpoint (pretest) and after applied the method NHT with Macromedia Flash and Powerpoint (posttest).Independent Sample T-test was used to test whether NHT cooperative learning methods with Macromedia Flash can improve learning achievement higher than NHT method with Powerpoint.

RESULT AND DISCUSSION

Description of Learning Achievement of Experiment Class and Control Class

After the learning process in each class, the students get grades as learning achievementThe following tableis a description of the learning achievement in experimental class and control class.

Table 3. Description of Student Achievement of Experiment Class and Control Class

source Variance	class Experiment		classroom Control	
	pretest	posttest	pretest	posttest
N	32	32	30	30
Amount	2315	2859	2177	2407
Average	72.34	89.35	72.57	80.23
Maximum	90	98	88	92
minimal	50	78	52	68

Σ Not completed	14	3	16	8
Σ Completed	18	29	14	22
% Not Completed	43.75%	9.37%	53.33%	26.67%
% Completed	56.25%	90.63%	46.67%	73.33%

(Data processed, 2017)

Based on table 3 shows that the experimental class and control class prior to treatment have an average learning achievement is relatively the same. From the data obtained an average pretest score 72.34 experimental class highest score of 90, the lowest score of 50. While the average grade obtained control of 72.57, the highest score of 88, and the lowest score of 52. The level of completeness pretest experimental group is 18 students that 56.25%. While on a class pretest level control thoroughness as many as 14 students is 46.67%.

Paired Sample T-test result in the experimental group showed Sig. 2-tailed <level of significance (0.000 <0.05) means that there is an increase in the average value of pretest to posttest value of the experimental group. The average value of pretest before their treatments NHT method with Macromedia Flash is 72.34 and posttest value after their treatments NHT method with Macromedia Flash is 89.35. This shows an increase from prior to their treatment until after their treatment NHT learning method with Macromedia that is $(89.35 - 72.34) = 17.01$. Paired Sample t-test result in the control group gained Sig. 2-tailed <level of significance (0.000 <0.05), which means there is an average increase learning achievement in the control group. The average value of the control group pretest by 72, 57 and the average post-test score is 80.23. So there was an increase of $(80.23 - 72.57) = 7.66$.

The result of Independent Sample T-Test showed posttest results of the two groups had Sig. 2-tailed <level of significance (0.000 <0.05), which means that there is a difference between the average learning achievement control class with a class experiment. The average value of the experimental class 89.35, while in the control group at 80.23. This shows that the average achievement experimental class implementing learning teaching methods NHT with Macromedia Flash has risen higher than the control group using NHT method with Powerpoint $(89.35 > 80.23)$. The results of the design pattern design of experiments in the study can be seen from the following table:

Table 4. Results of Design Patterns of Experiments pretest-posttest control group design.

Group	R		On average before treatment (Pretest)	Treatment	→	On average after treatment (Posttest)
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Experiment	R	→	72.34	NHT cooperative learning method with Macromedia Flash	→	89.35
Control	R	→	72.57	NHT cooperative learning method with Powerpoint	→	80.23

(Data processed in 2017)

In Table 4 show an increase in student achievement of learning caused by the treatment with different learning methods. In the experimental group using cooperative learning NHTwith Macromedia Flash has increased from an average pretest score of 72.34 to 89.35 on the average value posttest. In the control class is also an increase in the average value of pretest 72.57 to 80.23 on the average post-test score. The cooperative model of Numbered Heads Together (NHT) using Macromedia Flash resulted in a better learning achievement than the Numbered Heads Together (NHT) cooperative learning model using Powerpoint media.

Cooperative learning activities make it possible for students to complete, helps to focus attention and take full advantage of the opportunity given the task to build their understanding of the material being studied. Students also adopts a constructivist stance using cooperative learning activities to engage students and provide opportunities for them to draw on their own experience in order to build their understanding of things that are learned (Cavanagh, 2011). Macromedia Flash and PowerPoint instructional media are expected to support the creation of a varied and interesting learning in order to achieve the effectiveness of the delivery and receipt of learning materials. After the learning process students are expected to experience an increase in academic achievement. An increase learning achievement in the experimental class can not be separated from the learning aspect NHT with Macromedia Flash that runs well. Students exchange their thoughts and express their opinions in group discussions. By applying and maintaining an opinion in the discussion can increase students' self-confidence. The interaction of students with teachers increases where students actively ask the teacher if they have difficulty in doing the discussion. Students also actively answer questions relating to the subject matter provided by the teacher. Intimate learning atmosphere makes the students quickly adjust in the group. Students were active helping other members in the group who have difficulty in working on the discussion. The average yield value posttest experimental class is higher than the control class due instructional design using Macromedia Flash and NHT Cooperative learning model by making students pay more attention to learning materials and noted the discussion of both teachers and of the results of group discussions. In addition, students also become more active in seeking information about the learning material from the book and Macromedia Flash.

Macromedia Flash is a combination of the concept of learning with audiovisual technology capable of generating new features that can be utilized in education. Multimedia-based learning can certainly present a more interesting subject matter, not monotonous, and facilitate the delivery. Learners can study a particular subject matter independently with a computer equipped with a multimedia program. Multimedia has great potential to influence the characteristics of heterogeneous learners flexibly. Multimedia presents a constructivist learning environment based technology, ie students can solve the problem by means of self-exploration, cooperation and active participation. Simulations, models and rich media images and animated graphics, video and audio are integrated in a structured way can facilitate learning new knowledge much more effectively so that it can improve learning achievement. Multimedia show qualification as a source of learning that can be tailored to the learning environment. Multimedia has also been successful in psychomotor development and strengthening of the visual processing of the intended users (Malik and Agarwal, 2012).

Based on the analysis above are generally cooperative learning NHT with Macromedia Flash makes the students better in receiving learning. The learning achievement of the experimental class has significant differences on learning achievement than the control class. According to the results of the research, the improvement of learning achievement that experienced by experimental class is higher than the control class. In terms of mastery learning, NHT method with Macromedia Flash has provedable to complete the learning achievement in accordance with the terms of completeness. Based on school policy places, a class is said to be complete research study if there is $\geq 80\%$ of students who have completed their study. The results showed maximum thoroughness obtained experimental class at 90.63%.

From the description of the results of this research note that cooperative learning NHT with Macromedia Flash and Powerpoint can be used to achieve the learning objectives. NHT learning methods with Macromedia Flash proved to be more effective in improving student achievement and increase activity in the learning activities. NHT type cooperative learning model using Macromedia Flash can improve students' learning psroses better. The use of audio, images and animations are diverse and the presence of existing feedback on Macromedia Flash makes the learning process more interesting, varied and not boring. Students can focus on learning material from learning media and group of friends.

CONCLUSION

Based on the findings, it can be concluded that the application of the Numbered Heads Together (NHT) cooperative learning model using Macromedia Flash significantly enhances students' achievement in economics learning. In Class

XI Social of SMA Negeri 11 Semarang, the average pre-treatment score was 72.34, which increased to 89.35 after implementing NHT with Macromedia Flash. Furthermore, students who were taught using the NHT model combined with Macromedia Flash achieved higher scores compared to those using NHT with PowerPoint, with average scores of 89.35 and 80.23, respectively. This demonstrates that integrating interactive and visually engaging media into cooperative learning fosters better understanding and retention of learning materials.

Based on these results, teachers are encouraged to adopt the NHT model with Macromedia Flash as a strategy to improve both learning outcomes and student engagement in economics. It is also recommended that teachers guide students continuously in fostering collaborative values such as teamwork and mutual respect during discussions, while also ensuring equitable participation in group tasks. For future researchers, further studies could explore the long-term impact of multimedia-supported cooperative learning models on different subjects, educational levels, and cognitive skills. Additionally, expanding the study to include other interactive media platforms could provide broader insights into the effectiveness of digital tools in diverse learning environments.

REFERENCES

- Arsyad, A. 2013. Learning Media. pp 25. RajaGrafindoPersada: Jakarta.
- Aspin, David N., & Chapman, Judith D. (2017). *Values education and lifelong learning: Principles, policies, programmes* (Vol. 10). Springer.
- Avis, James, Fisher, Roy, & Thompson, Ron. (2018). *Teaching in Lifelong Learning 3e A guide to theory and practice*. McGraw-Hill Education (UK).
- Cavanagh, M. 2011. Students' Experiences Of Active EnGagement Through Cooperative Learning Activities In Lectures. *Active Learning in Higher Education*, Volume 12, Number 1, pp. 23-33.
- Hamdani. 2011. Teaching and Learning Strategies. pp 21. Pustaka Setia: Bandung.
- Jogiyanto. 2018. Information Systems Research Methodology. pp 105. Andi Offset: Bandung.
- Lee, John C. K., Cheung, Chris H. W., & Li, Michelle Y. H. (2019). Life planning education and life education: Lifelong learning perspectives. *Hong Kong Teachers' Centre Journal*, 18, 57–77.
- Lie, A, 2014. Cooperative Learning: Practicing Cooperative Learning in Space-Classroom. pp 59. Grasindo: Jakarta.
- Makumane, M. A., & Khoza, S. B. (2020). Educators' reasonings and their effects on successful attainment of curriculum goals. *South African Journal of Higher Education*, 34(2), 11–95.
- Malik, Ranbir Singh. (2018). Educational challenges in 21st century and sustainable development. *Journal of Sustainable Development Education and Research*, 2(1), 9–20.

- Malik, S., and Agarwal, A. 2012. Use of Multimedia as a New Educational Technology Tool-A Study. *International Journal of Information and Education Technology*. Vol. 2, No. 5, pp. 468-471.
- Mialiawati, Inggis. (2020). The effect of globalization on culture, information technology, and education. *Proceeding ICTESS*, 767–783.
- Mulyasana, Dedy. 2011. Quality Education and Competitive. pp 4. RemajaRosdakarya: Jakarta.
- Perfetti, C and Spool, JM 2012. Macromedia Flash: A New Hope For Web Applications. User Interface Engineering. pp 3. Downloaded from <https://www.uie.com/publications/whitepapers/FlashApplications.pdf>
- Reimers, Fernando M., & Chung, Connie K. (2019). *Teaching and learning for the twenty-first century: Educational goals, policies, and curricula from six nations*. Harvard education press.
- Sadiman, US, Rahardjo, R., Haryono, A., and Rahardjito. 2012. Media Education: Definition, Development, and Pemanfaatannya. pp 23-25. RajaGrafindo Persada: Jakarta.
- Suprijono, A. 2011. The cooperative learning PAIKEM Theory and Applications. pp 65. Pustaka Pelajar: Yogyakarta.
- Terziev, Venelin. (2019). Lifelong learning: the new educational paradigm for sustainable development. *International E-Journal of Advances in Social Sciences*, 5(13), 82–98.
- Tu'u, Tulus. 2014. Role of Behavior and Discipline Student On Student Achievement. pp75. Grasindo: Jakarta.
- Uz, C., Orhan, F., and Bilgic, G. 2010. Prospective Teachers' Opinions On The value of Power Point Presentations in lecturing. *Journal Of Procedia Social and Behavioral Science*. Vol 2, pp 2051-2059.