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Comparison Of Student Learning Outcomes Of Cooperative Learning Models Of Structured Numbered Heads Type With Pair Exchange Type In Economics Subjects

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Abstract

This study aims to determine the differences in student learning outcomes in Economics subjects in class XI SMAN 10 Kota Jambi who are taught using the Structured Numbered Heads cooperative learning model and the pair exchange type. This study uses an experimental method, in simple terms, experimental research seeks the effect of a given treatment. The population in the study was 108 people. The sampling technique in this study was purposive sampling, so that 40 students of class XI IPS 1 were selected as the control class and 35 students of class XI IPS 3 as the experimental class. The results of the study showed that student learning outcomes in Economics subjects taught using the pair exchange cooperative learning model were higher than student learning outcomes in Economics subjects taught using the Structured Numbered Heads cooperative learning model, with Sig. 0.000 <0.05. Students are expected to be able to play an active role in the learning process. By being actively involved in the learning process, it can increase positive learning attitudes, so that learning outcomes increase.

Keywords: *Structured Numbered Heads, Exchanging Pairs.*

INTRODUCTION

Education is one of the keys to successful development in a country. This is because education is able to produce reliable and quality driving forces for development (Mayasari et al., 2024). In the current era of the Economic Community, the existence of quality human resources has a very important role, especially in facing increasingly complex competition with other MEA member countries such as Indonesia, Thailand, Vietnam, Malaysia, and Singapore (Rahima et al., 2023).

Every individual needs education to support the sustainability of their lives in the future. Education is able to develop the potential of each individual, so that they become independent, creative, and responsible individuals (Dacholfany et al., 2023). This is in line with the statement contained in Law of the Republic of Indonesia No. 20 of 2003 concerning the National Education System Article 3 states that "National education aims to develop the potential of students to become human beings who believe in and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic and responsible citizens" (Rahim et al., 2023).

The success of formal education in schools is partly determined by the teacher. Teachers are individuals who interact directly with students in the learning process (Rosmiati & Saputra Hutabarat, 2021). Therefore, a teacher must be able to create an active,

innovative, and enjoyable learning process, so that students are able to develop their creativity and activities during the learning process. A professional teacher is required to have the ability to apply innovative and varied learning models during the learning process (Saputra Hutabarat, 2017).

In order to improve student learning outcomes in economics subjects, one of the ways can be achieved is through the use of learning models in the learning process. The cooperative learning model prioritizes cooperation by solving problems to apply knowledge and skills in order to achieve learning goals. The cooperative learning model has types including Structured Numbered Heads and exchanging partners (Syuhada et al., 2023).

Based on observations made by the author during the Field Experience Practice at SMA Negeri 1 Jambi City, it is known that most teachers only use the lecture method, so that learning tends to be monotonous and centered on the teacher. Students in the learning process are more passive, they only receive the material presented by the teacher. This results in student activity in the learning process not being optimal. Where, few students read the material, ask questions, and answer questions given by the teacher (Saputra Hutabarat, 2017).

Learning is a process of changing a person's personality where the change is in the form of improving the quality of behavior, such as increasing knowledge, skills, thinking power, understanding, attitudes, and various other abilities. Baharuddin and Esa (2010) and (Almaududi et al., 2023) stated that "Learning means gaining knowledge or mastering knowledge through experience, remembering, mastering, experience, and getting information." Meanwhile, Daryanto (2010:2) stated that "Learning is a process of effort carried out by someone to obtain a change in a new level of behavior as a whole" (Suratno & Hutabarat, 2018).

Learning outcomes are the ability of skills, attitudes acquired by students after receiving treatment given by the teacher so that they can construct that knowledge in everyday life. Purwanto (2013:38) states that "Learning outcomes are a process within an individual who interacts with the environment to get changes in their behavior. Learning is a mental or psychological activity that takes place in active interaction with the environment that results in changes in knowledge, skills, and attitudes". Meanwhile, Suprijono (2017) and (Hutabarat & Jambi, 2022) state that "Learning outcomes are patterns of behavior, values, understandings, attitudes, appreciation and skills". It can be concluded that learning outcomes are something that students achieve or obtain thanks to their efforts which are expressed in the form of assignments, knowledge and basic skills found in various aspects of life, so that they have an impact on the individual's knowledge and basic skills contained in various individuals changes in behavior levels quantitatively.

Meanwhile, Slameto (2010) and (Saputra et al., 2021) stated that there are many types of factors that influence learning. However, they can be classified into 2 (two) groups, namely: 1) Internal factors, are factors that exist within the individual such as physical factors (health factors, physical disabilities) and psychological factors (intelligence, attention, interests, talents, motives, maturity, and readiness), 2) External factors, are factors that exist outside the individual such as family factors, (how parents educate, relationships between family members, home atmosphere, family economic situation, parental attention, and cultural background), school factors, (teaching methods, curriculum, teacher-student relationships, student-student relationships, school discipline, teaching tools, school hours, above-average lesson standards, building conditions, and homework),

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and community factors (student activities in society, mass media, friends, and forms of community life). The learning model will be effective and run according to the nature of students as social beings, namely beings who cannot stand alone, but always need cooperation with others to learn ideas, solve problems and apply what they learn. Clearly, cooperative learning does not only aim to instill students in the material to be studied but emphasizes more.

Suprijono (2017) and (Pratiwi et al., 2024) state that "The learning model refers to the approach to be used, including learning objectives, stages in learning activities, learning environment and classroom management". Meanwhile, Trianto (2011) and (Hutabarat, 2023) state that "The learning model is one of the plans or a pattern used as a guideline in planning learning in class or learning in tutorials and to determine learning devices including books, films, computers and others".

Rusman (2016) and (Rosmiati & Hutabarat, 2019) stated that "The cooperative model is a form of learning activity in which students work collaboratively in small groups consisting of four to six people with a heterogeneous group structure". Furthermore, Sanjaya (2018) and (Hutabarat et al., 2024) explained that "The Structured Numbered Heads cooperative learning model is an approach developed to involve students in studying the material covered in a lesson by checking students' understanding of the contents of the lesson. And with this method, it is hoped that students will be more active in learning which can ultimately improve learning outcomes".

LITERATURE REVIEW

Suparno (2018) and (Halal et al., 2024) stated that there are 9 (nine) steps in the Structured Numbered Heads cooperative learning model, namely: 1) Writing learning topics on the board, 2) Delivering learning objectives, 3) Dividing students into groups (each group consists of four to five people). Distributing questions containing five questions/problems to each group. Each student in the group works on the question number according to the chest number attached. Furthermore, students in groups discuss the correct answers and ensure that each group member can work on/knows the answer, 4) Giving questions to all students in the class, 4) The teacher appoints students who raise their hands (chest number 1 who have never spoken/expressed an opinion) to report the results of cooperation in the group. Other students pay attention and respond in group discussion activities, 5) Point to other numbers until all assignments or questions are reported, 6) As a facilitator and motivator, the teacher is tasked with guiding students to carry out class discussions, 7) Provide reinforcement for the results of class discussions, 8) Guide students to draw conclusions.

Istarani (2018) and (Rosmiati, Nurmala Sari, Novia Sri Dwijayanti, 2021) stated that "The pair exchange learning model is a learning model that can be used in the teaching and learning process by emphasizing the search for each student's partner to discuss or talk about the assignment given by the teacher, then exchange partners again to enrich or find the truth from the answers to the assignments given by the teacher". This means that the pair exchange cooperative learning model is that students are divided into pairs to work on an assignment from the teacher, then one of the pairs from the group joins another pair to ask each other and confirm each other's answers.

According to Nasution (2016) (Rustantono et al., 2024) from the SLAVIN theory, there are 7 (seven) steps in the cooperative learning model of the pair exchange type,

namely: 1) Students are formed into groups in pairs or 2 people, 2) The teacher gives assignments and students work on assignments with their partners, 3) After finishing each pair joins one pair from another group, 4) The two pairs exchange partners, then the new pair asks each other and looks for their answer capacity, 5) New findings obtained from the pair exchange are then shared with the original pair, 6) Conclusion, 7) Closing.

RESEARCH METHOD

In simple terms, experimental research is research that seeks the influence of a given treatment. Sugiyono (2015:107) states that "Experimental research can be interpreted as a research method used to seek the influence of certain treatments on others under controlled conditions". This experimental research involved 2 (two) classes, namely the experimental class given treatment with a cooperative learning model of the pair exchange type and the control class with treatment with a cooperative learning model of the Structured Numbered Heads type. Experimental class. After being given treatment, students were given a final test (post-test) to determine the effect of the treatment on student learning outcomes.

RESULTS AND DISCUSSION

The first comparative analysis used was through the initial and final pre-tests in both the control and experimental classes, as follows:

Table1: Differences in Learning Outcomes (Pre-Test) of Control and Experimental Class Students

Class Kontrol (X IPS 1)			**Class Eksperimen (XIPS 3)**		
Class Interval	**Frekuensi**	**%**	**Class Interval**	**Frekuensi**	**%**
60 – 63	10	27,8	45-49	1	3,13
64 – 67	11	30,6	50-54	0	0
68 – 71	7	19,4	55-59	4	53,13
72 – 75	4	11,1	60-64	17	12,5
76 – 79	3	8,3	65-69	4	21,86
80 – 83	0	0	70-74	3	9,38
84 – 87	1	2,8			
Total	**36**	**100**	**Total**	**32**	**100**
Mean	67.98		Mean	58.90	
Median (Me)	67.5		Median (Me)	57.5	
Modus (Mo)	67		Modus (Mo)	55	
Standar Deviasi (Sd)	5.695		Standar Deviasi (Sd)	6.411	
Varians (S)	32.436		Varians (S)	41.104	

Source: Researcher data processing in 2025

Based on the data processing in appendix 9, it is known that the average calculation (mean) of the learning outcomes (pre-test) of the control class is 67.98 and the value of the standard deviation of the learning outcomes (pre-test) of the control class is 5.697. This shows that the level of deviation of the learning outcome data (pre-test) of the control class

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from its mean value is 5.695. In addition, it is also known that the variance of the learning outcome data (pre-test) of the control class is 32.436. This means that the level of diversity of the learning outcome data (pre-test) of class XI IPS 1 students at SMAN 10 Kota Jambi is 32.436. A.

Table2: Comparison of Learning Outcomes (Post-Test) of Control Class and Experimental Class Students

Class Kontrol (X IPS 1)			**Class Eksperimen (XIPS 3)**		
Class Interval	**Frekuensi**	**%**	**Class Interval**	**Frekuensi**	**%**
70 – 73	2	5,6	87.5 - 88,5	5	315,62
74 – 77	2	5,6	89.5 – 90.5	8	25
78 – 81	7	19,4	91,5 - 92,5	9	28,13
82 – 85	16	41,7	93,5 – 94,5	0	0
86 – 89	6	16,7	95,5 - 96,5	10	31,25
90 – 93	3	8,3	97,5 – 98,5	0	0
94 – 97	1	2,8			
Total	**36**	**100**	**Total**	**32**	**100**
Mean	83.26		Mean	91.64	
Median (Me)	83.		Median (Me)	92.	
Modus (Mo)	85		Modus (Mo)	95	
Standar Deviasi (Sd)	5.271		Standar Deviasi (Sd)	3.336	
Varians (S)	27.793		Varians (S)	11.133	

Source: Researcher data processing in 2025

Based on data processing in appendix 15, it is known that the average calculation (mean) of learning outcomes (post-test) of the control class is 83.26 and the standard deviation value of learning outcomes (post-test) of the control class is 5.271. This shows that the level of deviation of learning outcome data (post-test) of the control class from its mean value is 5.721. In addition, based on data processing in appendix 10, it is also known that the variance of learning outcome data (post-test) of the control class is 27.793. This means that the level of diversity of learning outcome data (post-test) of class XI IPS 1 students at SMAN 10 Kota Jambi is 27.793.

Student Learning Outcomes in Economics Subject in Class XI IPS SMN 10 Jambi City Using the Pair-Exchange Cooperative Learning Model.

Based on the data processing in appendix 9, it is known that the average calculation (mean) of the learning outcomes (pre-test) of the experimental class taught using the pair-exchange cooperative learning model is 58.90. Meanwhile, based on the data processing in appendix 15, it is known that the average calculation (mean) of the learning outcomes (post-test) of the experimental class is 91.64. Thus, it can be concluded that the mean learning outcomes (post-test) have increased compared to the learning outcomes (pre-test). Where, the mean learning outcomes (post-test) are 91.64, while the mean learning outcomes (pre-test) are 58.90.

The findings of this study are supported by Wulandari (2017:7) who stated that there is an influence of the application of the pair-exchange cooperative learning model on Economics learning outcomes. The learning outcomes of students in the Economics of the experimental class who were given a cooperative learning model of the pair exchange type were higher than the learning outcomes of the Economics of the control class who were given conventional learning. So, the application of the cooperative learning model of the pair exchange type in the learning process can improve learning outcomes. Furthermore, the results of the study were strengthened by Suryani's research (2017: 1) stating that cooperative learning of the pair exchange type had a positive impact on improving student learning achievement which was carried out in 3 cycles with the results obtained, namely physical activity from the baseline 30.77% cycle I, namely 59.61%, cycle II, namely 75.00% and cycle III, namely 87.5%. Mental activity from the baseline 15.39% cycle I, namely 57.70% cycle II, namely 80.77% and cycle III, namely 85.41%. Emotional activity from the baseline 20.51%, cycle I, namely 71.80%, cycle II, namely 82.04% and cycle III, namely 86.11%.

Student Learning Outcomes in Economics Subject of Class XI IPS at SMAN 10 Kota Jambi Using Cooperative Learning Model Type Structured Numbered Heads

Based on data processing in appendix 10, it is known that the average calculation (mean) of learning outcomes (pre-test) of the control class taught using the Structured Numbered Heads cooperative learning model is 67.98. Meanwhile, based on data processing in appendix 16, it is known that the average calculation (mean) of the results (post-test) of the control class is 83.26. Thus, it can be concluded that the mean learning outcomes (post-test) have increased compared to the learning outcomes (pre-test). Where, the mean learning outcomes (post-test) are 83.26, while the mean learning outcomes (pre-test) are 67.98.

The findings of this study are reinforced by research by Sari (2017:26) stating that the learning outcomes of SMP Nurur Iman students in Islamic Religious Education lessons are very influential for the development of student learning outcomes, and encourage students to play an active role in discovering knowledge themselves. Furthermore, the results of this study are reinforced by research by Ratih (2017:2) stating that the cooperative learning model of the Structured Numbered Heads type can improve the geography learning outcomes of class X students of SMA Negeri 2 Trenggalek can be carried out with the stages of each cycle including planning, implementation, observation, and reflection. The results of the study showed that student learning activity increased from 77.78% in cycle I to 88.70% in cycle II. The average student learning outcomes increased from 76.09 in cycle I to 86.63 in cycle

Differences in Student Learning Outcomes in Economics Subjects in Class XI IPS SMAN 10 Kota Jambi Using the Structured Numbered Heads Cooperative Learning Model and the Pair Exchange Cooperative Learning Model

Based on data processing in appendix 15, it is known that the average calculation (mean) of learning outcomes (pots-test) of the experimental class taught using the pair exchange cooperative learning model is 91.64. Meanwhile, based on appendix 16, it is known that the average calculation (mean) of learning outcomes (post-test) of the control class taught using the Structured Numbered Heads cooperative learning model is 83.26.

Thus, it can be concluded that student learning outcomes in Economics subjects taught using the pair exchange cooperative learning model are higher than student learning outcomes in Economics subjects taught using the Structured Numbered heads cooperative learning model.

The results of this study are supported by Pratama's research (2018:27) stating that there is a significant difference in increasing physical activity, mental activity and emotional activity of students using the cooperative learning model of the pair exchange technique for Citizenship Education learning. Furthermore, this result is reinforced by Edrima (2013:13) stating that pair exchange is a technique that in its implementation requires great care and teacher guidance and the application of the pair exchange technique learning model is used more often in order to improve the quality of education in general and improve the quality of learning in particular.

CONCLUSION

Based on the presentation of the research results above, it is concluded that: 1) Student learning outcomes in economics subjects taught using the Structured Numbered Heads cooperative learning model obtained an average count (mean) of 83.26. 2) Student learning outcomes in economics subjects taught using the pair exchange cooperative learning model obtained an average count (mean) of 91.64. 3) The learning outcomes of students in economics subjects taught using the cooperative learning model of the pair exchange type are higher than the learning outcomes of students in economics subjects taught using the cooperative learning model of the Structured Numbered Heads type, with Sig. 0.000 < 0.05.

REFERENCES

Almaududi, S., Simarmata, J., Hutabarat, Z. S., & Teffu3, T. (2023). Pengaruh Keberagaman Karyawan Terhadap Kepuasan Kerja Pada Dinas Perhubungan Kota Jambi. *Jurnal Manajemen Dan Akuntansi Medan*, *5*(2), 42–52. https://doi.org/10.47709/jumansi.v5i2.2546

Dacholfany, M. I., Ikhwan, A., Budiman, A., Hutabarat, Z. S., Riady, Y., Hutabarat, Z. S., Yusdi Andra, Denny Denmar, Z. S. H., Rosmiati, Z. S. H., Keguruan, F., Jambi, U. B., Kagermann, H., Annisa Sepriani, Z. S. H., Harbeng Masni, Zuhri Saputra Hutabarat, Lili Andriani, D. A., Suratno, M., Saputra Hutabarat, Z., Sari, N., Suratno, S., Hutabarat, Z. S., Denmar, D., … Unbari, F. (2023). Teachers' Constraints in Organizing Learning Process for High School Students in Jambi. *AL-ISHLAH: Jurnal Pendidikan*, *3*(1), 1–23. https://doi.org/10.35445/alishlah.v14i4.1667

Halal, S., Declare, S., Pratiwi, H., & Hutabarat, Z. S. (2024). *Pengabdian Masyarakat Sumber Daya Unggul Diseminasi Standarisasi Jaminan Produk Halal dalam Memenuhi Kriteria*. *2*(1), 26–30. https://doi.org/10.37985/pmsdu.v2i1.359

Hutabarat, Z. S. (2023). Kesulitan Belajar Akuntansi Keuangan (Studi Kasus Pada Materi Merchandise Inventory Management). *Eklektik : Jurnal Pendidikan Ekonomi Dan Kewirausahaan*, *5*(2), 149. https://doi.org/10.24014/ekl.v5i2.19154

Hutabarat, Z. S., & Jambi, U. B. (2022). *Hubungan Antara Persepsi Siswa Tentang Kompetensi Sosial Guru Ekonomi Dan Lingkungan Sekolah Dengan Motivasi Belajar Ekonomi Siswa Kelas Xi Ips Sman 4 Muara Bungo*. *5*(1), 110–120.

Hutabarat, Z. S., Lela, L., Masni, H., & Pratiwi, H. (2024). IbM MAHASISWA DALAM PEMBUATAN MEDIA 3D PEMBELAJARAN DALAM PERSIAPAN PRAKTEK MENGAJAR.

Pengabdian Deli Sumatera, *3*(1), 36–44.

Mayasari, M., Hidayati, U., Muslim, F., Aisyah, N., Hutabarat, Z. S., & Mareta, Y. (2024). Development Of Economic Mathematics Learning System Through Master Model For Students Of Economic Education Study Program. *Owner*, *8*(3), 2650–2660. https://doi.org/10.33395/owner.v8i3.2284

Pratiwi, H., Hutabarat, Z. S., Nabila, R., Hevinosa, A. D., & Mauli, C. (2024). Multidisciplinary Sciences and Arts Blue Economic Beacon : Red And White Leads The Way Through Niche Diplomacy International Journal of Multidisciplinary Sciences and Arts. *International Journal of Multidisciplinary Sciences and Arts*, *3*(1), 344–351. https://jurnal.itscience.org/index.php/ijmdsa/article/view/3947/3108

Rahim, A., Masni, H., Afrila, D., Hutabarat, Z. S., Yarmayani, A., Pamungkas, A., & Syaputra, D. (2023). Motivasi Belajar dan Hasil Belajar Melalui Model Pembelajaran Kooperatif. *Jawa Tengah : Eureka Media Aksara*, 1–23. https://www.google.co.id/books/edition/MENUMBUHKAN_EKONOMI_KREATIF_DENGAN_PEMAN/MJwQEAAAQBAJ?hl=en&gbpv=1&dq=pemanfaatan+barang+bekas&printsec=frontcover

Rahima, A., Zahar, E., Rahim, A., & Hutabarat, Z. S. (2023). *Multidisciplinary Sciences and Arts How is Translation Learning Through the Application of the Cooperative-Contrastive Model ? International Journal of Multidisciplinary Sciences and Arts*. *2*(2), 252–259.

Rosmiati, Nurmala Sari, Novia Sri Dwijayanti, Z. S. H. (2021). *Increasing Student Economic Analysis Ability Through the Application of Case Study Methods in Capita Selekta Courses*. *12*(10), 2480–2490.

Rosmiati, R., & Hutabarat, Z. S. (2019). Peningkatan Mutu Ipteks Kewirausahaan (IbK) Pada Siswa Kelas XII SMAN 2 Kota Jambi. *Jurnal Ilmiah Dikdaya*, *9*(1), 98. https://doi.org/10.33087/dikdaya.v9i1.139

Rosmiati, R., & Saputra Hutabarat, Z. (2021). Hubungan Persepsi Mahasiswa tentang Mata Kuliah Kewirausahaan dan Hasil Belajar dengan Minat Berwirausaha Mahasiswa Reguler Angkatan 2013 Pendidikan Ekonomi. *Jurnal Ilmiah Dikdaya*, *11*(2), 342. https://doi.org/10.33087/dikdaya.v11i2.232

Rustantono, H., Rasyid, H., Nur Cholifah, T., Eka Yanti, Y., Amral, S., Saputra, T., & Saputra Hutabarat, Z. (2024). Exploring the Role of Family Economic Education in Meeting Economic Demands, Sociocultural Dynamics, and Enhancing Economic Literacy. *Jurnal Pendidikan*, *16*(2), 1947–1958. https://doi.org/10.35445/alishlah.v16i2.4942

Saputra Hutabarat, Z. (2017). Analisis Kepemilikan Atribut Soft Skills Mahasiswa Program Studi Pendidikan Ekonomi FKIP Univesitas Jambi. *Jurnal Ilmiah Dikdaya*, *9*(1), 145–155.

Saputra, Z., Umi, S., & Widjaja, M. (2021). *Experience in the Teaching Practice Program , Creativity , and Locus of Control for Preparedness to Become Teachers in the Industrial Revolution Era 4 . 0*. *12*(9), 4301–4313.

Suratno, & Hutabarat, Z. S. (2018). The Influence of Social Support, Self Confidence, and Motivation to Economic Learning Results Class XI. *SHS Web of Conferences*, *42*, 00021. https://doi.org/10.1051/shsconf/20184200021

Syuhada, S., Masni, H., Rahima, A., Zahar, E., Pudjaningsih, W., Budiyono, H., Wennyta, W., Syahputra, M. H. I., Harman, H., & Hutabarat, Z. S. (2023). The Perceptions of Jambi Province Students on the Teaching Profession. *AL-ISHLAH: Jurnal Pendidikan*, *15*(2), 2507–2517. https://doi.org/10.35445/alishlah.v15i2.2944