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The effect of jigsaw cooperative learning model on students' result breaststroke skill at tenth grade social science of senior high school 3 Cirebon city

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Abstract
The purpose of this study was to determine the effect of the jigsaw cooperative learning model on students' result of breaststroke skill and the influence of conventional learning on students' result breaststroke skill. This study was a quasi-experimental design with the non-equivalent pre-test and post-test control group. The population is 32 students at tenth grade Social Science of Senior High School 3 Cirebon city as many as 32 male students and the determination of subject samples into groups used matching pair techniques with the Abba formula. The instrument of this research used breaststroke skill test. Based on the results of the research, it was concluded that: 1) There is the influence of the jigsaw cooperative learning model on the results of breaststroke swimming skills; 2) There is no influence of the direct learning model on the results of breaststroke swimming skills; 3) Increasing the results of breaststroke skill with the Jigsaw type cooperative learning model is better than the direct learning model. The results of this study are expected to improve the results of breaststroke skill to be far more effective and efficient with the selection of the appropriate model.

Keywords: Jigsaw, breaststroke skills, learning model, cooperative learning

Introduction
Swimming is one of the activities in the pool (water) which is arranged in such a way that produces a regular movement. Definition swimming according to Solihin and Sriningsih (2016) [1] is Water sports that require athletes to make effective and efficient movements. This is because in this sport requires maximum speed to produce the best time record to finish as well as the athletic run number. There are several styles in this sport, as stated by FINA (Federation International Nation Amateur) including freestyle (freestyle), backstroke (backstroke), chest style (breaststroke), and butterfly style (butterfly stroke).

Breaststroke according to Roji and Yulianti (2018) [2] is *swimming with the chest facing the surface of the water, but different from the freestyle, the torso is always in a steady state.* Chest movement both legs kick outwards while both hands are straightened in front. Both hands are opened to the side like a splitting motion so that the body advances faster forward, while body movements mimic the movement of frogs swimming so-called frog style. And breathing is done when the mouth is on the surface of the water, after one hand-leg movement or two hand movements.

The aim of breaststroke swimming learning in high school is in accordance with the school syllabus (2018) [3] *able to discuss and correct errors in breaststroke swimming, as well as doing breaststroke swimming movements correctly.* Based on this objective, it is clear that through breaststroke skill students are expected to be able to conduct breaststroke skill effectively and efficiently. However, sometimes it is often heard that swimming learning in ordinary schools uses conventional learning (direct learning models).

Conventional learning according to Isaak (2010) [4] is *Learning is usually done by teachers traditionally without giving students enough time to reflect on the material presented and not connect real life situations.* One of them is a direct learning model, where the teacher must demonstrate the knowledge and skills that will be trained to students step by step. The direct learning model is a teaching approach specifically designed to support the learning process that is related to declarative sand procedural knowledge that is well structured, and requires

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Students to learn a basic skill in getting information step by step (Eko and Indra, 2012) [2]. In this model, the teacher is considered the main source in the learning process. This is in accordance with the opinion expressed by Setiawan (2012) [5] *teaching like this as an implementation of bank-style education is only seen as an activity providing information that must be swallowed up by students.*

The reality in the field when the writer observed the results of breaststroke skill with conventional learning in one of the tenth grade Social Sciences classes at Senior High School 3 Cirebon city was still not good and there was still a need for coaching efforts in the breaststroke swimming learning process. Coordination of breaststroke movements that are less precise results in swimming power being less efficient. The following observation data on the results of breaststroke skill were obtained from 32 students who observed the results of 56.25% of students with criteria less than the Criteria Minimum Score and 43.75% of students had achieved the Criteria Minimum Score. So the writers saw the result of the observation of the student's breaststroke skill at that time was still low.

The factors that cause the results of students' skills are completed are: (a) the number of students who have low motivation on physical education subjects, especially in breaststroke skill, (b) the attitude of students who are less active in following the learning process, (c) lack of facilities and infrastructure that causes many students to be inactive in the learning process. Based on these problems, the researcher wants to provide a learning model and contains clear stages and students are able to solve their own problems. Therefore, there is a need for a learning model to help deliver the learning material for chest style swimming in accordance with the correct stages, one of which is through the jigsaw cooperative learning model.

This type of Jigsaw cooperative learning model is chosen because it makes it easier for students to get more effective and efficient learning by showing groups of experts who have the task of delivering the material they can because the group of experts has more abilities than other students. Students are given material to be studied in each group randomly assigned to become experts in a particular aspect of the material. After reading the material, the group of experts from each material gathered to discuss their topic and then return to the original group to teach their group friends. The last, test was given on all the topics. These activities have correlation with cooperative jigsaw learning which emphasizes the ethos of group cooperation.

This is reinforced by the results of research by Wijaya (2014) [6] that: *in order to implement the jigsaw type cooperative learning model, because it is proven to be able to improve the activities and learning outcomes of students on soccer passing control basic techniques.* Therefore, the writer will handle this problem through a cooperative type jigsaw model so that the results of skills are far more effective and efficient. As stated by Djihad and Suyanto (2013) [7] is *the best learning method is to teach others.* Therefore, the selection of the jigsaw cooperative learning model as a learning strategy will greatly help students in teaching the material to their friends and accelerate and streamline the learning process and can maximize learning conditions to achieve learning goals and gain maximum learning experience, both individual experience, and group experience.

Besides, clever students can develop their abilities and skills while low students are helped to complete the task given. Learning benchmarks in the learning process P.E leads to

skills. Skills should be developed and trained continuously in order to increase a person's ability to become an expert or professional in one particular field to the stage of automation. Based on the description described above, the writers are interested in conducting research with the title "The Effect of Jigsaw Cooperative Learning Model on Students' Result Breaststroke Skill at Tenth Grade Social Science of Senior High School 3 Cirebon Academic Year 2018/2019".

Research methods
The research method is a quasi-experimental. The design used is the nonequivalent post-test control group design. The population is males of tenth grade of Social Science who have not mastered the basic breaststroke skill with 32 students. This research uses samples with matching-pair techniques because they directly divided the subject into two groups. The experimental group uses the jigsaw cooperative learning model and the control group used the direct learning model. The instrument used is the breaststroke skill test; the assessment uses rubrics and photo documentation when conducting research. The results of breaststroke skill in this study were through 4 meetings. The data that has been obtained are: quantitative data, namely pre-test and post-test data which are then analyzed descriptively and inferentially to determine the effect and increase of breaststroke swimming skills.

Results and Discussion
The results of the descriptive analysis of the pre-test, post-test, and N-Gain data were conducted to determine the maximum score, minimum score, average score, and standard deviation to be examined in Table 1.

Table 1: Recapitulation of breaststroke skill scores

Description	Learning			
	Jigsaw		Conventional	
	Pre-test	Post-test	Pre-test	Posttets
Number of Sampel	16	16	16	16
Score Minimum	4	5	4	4
Score Maximum	8	10	8	8
Average	6,18	7,68	6,12	6,31
Deviation Standard	1,37	1,57	1,31	1,30
Raising	1,5		0,19	
Average of N-Gain	0,28		0,03	

Table 1 shows that the maximum score and minimum pre-test score in the experimental and control groups are the same 8 and 4. The maximum score of post-test in the experimental group is 10 while the control group is 8. The minimum post-test score in the experimental group is 5 while in the control group 4 The average scores of the pre-test and post-test in the experimental group were greater, namely 6.18 and 7.68 while the control group was 6.12 and 6.31. The standard deviation scores of pre-test and post-test were greater in the experimental group of 1.37 and 1.57 while in the control group it was 1.31 and 1.30. From these results it could be said that the experimental group could increase the results of breaststroke skill by 1.5 while in the control group increased by 0.19. As for the average N-Gain score, breaststroke skill of students using the jigsaw cooperative learning model were 0.28 and breaststroke skill of students who used the direct learning model increased by 0.03.

To get a decision there is influence or not the researcher tests it with the Paired Sample T-test because the data is normal and homogeneous. Whereas to get a decision whether the increase in the results of breaststroke skill with the jigsaw

type cooperative learning model is better than the direct learning model the researcher tested it with Mann Whitney-U which was previously tested for normality first.

Table 2: Normality test results

| Research Data | Group | Shapiro Wilk | | | Exp. |
		Statistic	Df	Sig	
Pre-test	Experiment	0,898	16	0,074	Normal
	Control	0,922	16	0,182	Normal
Post-test	Experiment	0,931	16	0,249	Normal
	Control	0,904	16	0,095	Normal
N-Gain	Experiment	0,933	16	0,273	Normal
	Control	0,513	16	0,000	Abnormal

Based on Table 2 above, it can be seen that in the experimental group the value of sig pre-test 0.074> 0.05 and sig post-test 0.249> 0.05, the results of the normality test state the data are normally distributed and the sig value N-Gain score is 0.273> 0.05 so the data is stated normal distribution. While the results of the calculation of the data in the control group obtained the value of sig pre-test 0.182> 0.05 and sig post-test 0.095> 0.05, the data were declared to be normally distributed and the sig value of the N-Gain score was 0.000 <0.05 so the data was not normally distributed. In this case, the researcher uses the test criteria as follows:

H0 is accepted if p-value (sig)> α or 0.05
H0 is rejected if p-value (sig) α α or 0.05.

Then the *Levene* test is done to find out whether the data variant is homogeneous or not. The results of the homogeneity test can be seen in the table below.

Table 3: Homogeneity test result

| Research data | Homogenitas | | | | Conclusion |
	Levene Statistic	Df1	Df2	Sig	
Pre-test	0,401	1	30	0,531	Homogen
Post-test	0,672	1	30	0,419	Homogen
Prepost Experiment	0,238	1	30	0,629	Homogen
Prepost Control	0,080	1	30	0,779	Homogen

Based on Table 3 above the calculation results obtained the sig pre-test value of the experimental and control groups obtained 0.531> 0.05, the data was declared homogeneous. The results of the sig post-test of the experimental and control groups were obtained 0.419> 0.05, the data was declared homogeneous. The homogeneity test results on the pre-test and post-test data of the experimental group showed a sig value of 0.629> 0.05 meaning that the data is homogeneous. The homogeneity test results on the pre-test and post-test data of the control group also showed that the data was homogeneous as evidenced by the sig value of 0.779> 0.05. Because the research data is above normal and homogeneous, the hypothesis test used is the Paired Sample T-Test.

Table 4: Paired sample T-Test result

Data	t count	t tabel	Sig	Decision	Exp.
Prepost Eksperimen	5,477	2,131	0,000	H0 rejected	Significant
Prepost Kontrol	1,861	2,131	0,083	H0 accepted	Not significant

From Table 4 above, the results of the data show that the tcount>ttable in the experimental group is 5.477> 2.31 then H0 is rejected, as well as the sig value of the Paired Sample T-Test results in the experimental group is 0,000 <0.05 then H0 is rejected, which means that there is the influence of the

jigsaw type cooperative learning model on the results of breaststroke swimming skills. While the value of t-count <t-table in the control group is 1.861 <2.131 then H0 is accepted, as well as the sig value of the Paired Sample T-Test test in the control group is 0.083> 0.05, H0 is accepted which means there is no direct learning model effect on the results of skills swimming breaststroke.

Then the Mann-Whitney U test was performed to determine whether or not the improvement in breaststroke skill using jigsaw and direct learning models. The following are the Mann-Whitney U test results that have been done.

Table 5: Average N-Gain Difference Test

	Mann-Whitney U	Z	Asymp. Sig (2-tailed)	Keputusan
N-Gain	18.500	-4,315	0,000	H0 rejected

Based on Table 5 above, the results of the data show that the sig value of the average N-Gain test is smaller than 0.05 (0,000 <0, 05) then H0 is rejected, which means an increase in the results of breaststroke skill with the jigsaw type cooperative learning model better than conventional learning (direct learning model) at Tenth Grade Social Science of Senior High School 3 Cirebon Academic Year 2018/2019".

Conclusions

Referring to the research results and discussion that have been described, it can be concluded as follows:1. There is the influence of the jigsaw type cooperative learning model on students' result breaststroke skill at tenth grade Social Science of Senior High School 3 Cirebon city. 2. There is no influence of the direct learning model on students' result breaststroke skill at tenth grade Social Science of Senior High School 3 Cirebon city. 3. Increasing the results of breaststroke skill with the jigsaw type cooperative learning model is better than the direct learning model. Based on the results of this study, the writers suggest that educators and prospective educators can apply the jigsaw type cooperative learning model when learning breaststroke skill so that students understand the concepts taught, and make it easier to do breaststroke swimming learning according to the stages.

References

1. Solihin dan Sriningsih. Pintar Belajar Renang. Cetakan Ke-1. Bandung: Alfabeta, 2016.
2. Roji dan Yulianti. Pendidikan Jasmani Olahraga dan Kesehatan Kelas VIII. Cetakan Ke-3. Depok: Cv. Arya Duta, 2018.
3. Silabus. Pembelajaran Olahraga Renang Gaya Dada. Cirebon: SMA 3 Kota Cirebon, 2018.
4. Ishak. Pengaruh Pembelajaran Aquatik Melalui Pendekatan Bermain Terhadap Keterampilan Renang Gaya Bebas. Skripsi Penelitian Program Studi Pendidikan Jasmani. Universitas STKIP Pasundan Cimahi, 2010.
5. Setiawan. Pengembangan Perangkat Pembelajaran Matematika dengan Pendekatan Problem Based Learning untuk meningkatkan Keterampilan Higher Order Thinking. Unnes Journal of Research Mathematics Education. 2012; 1(1):72-80.
6. Wijaya. Implementasi Model Pembelajaran Kooperatif Jigsaw untuk Meningkatkan Aktivitas dan Hasil Belajar Passing Control Sepak Bola. Jurnal Penelitian Program Studi Pendidikan Jasmani Kesehatan, Rekreasi. Volume 1. Universitas Pendidikan Ganesha, 2014.
7. Djihad dan Suyanto. Calon Guru Dan Guru Profesional. Cetakan Ke-2. Yogyakarta: Multi Pressindo, 2013.