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The Effectiveness of Learning Basic Concepts of Art for Primary Teacher Education Students Using *Nomor Acak* Learning Models

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Abstract. The *nomor acak* learning model is done by randomly giving number to each student and making them remember it from the beginning to the end of the lecture. The function was to make each student be more active in the teaching and learning activities, since they must be prepared with their respective material if the number was called. This research employed a quasi-experimental research method with one group pre-test/post-test design. The determinant coefficient data of the effect of *nomor acak* models on the effectiveness of primary teacher education students obtained a class A data of 58.21%, class B of 36% and class C of 23%. This research was conducted at the primary teacher education program for six months in the Basic Concepts of Art courses to students of 2018. It could be concluded that *the nomor* acak learning model could improve the learning outcomes of students of the primary teacher education program in the Basic Concepts of Art course.

Keywords: basic concept of art, *nomor acak,* primary teacher education students.

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INTRODUCTION ~ *Nomor acak* learning model was developed by Zufriady and Syahrilfuddin by producing a theory about some steps of learning that have gained validation from experts and practitioners so that the theory is feasible to use (Zufriady et al, 2018). Nomor *acak* learning model is done by randomly giving a number to each student and making them always remember this number from the beginning to the end of the lecture. The function was to make each student be more active in teaching and learning process, since they must be prepared with their respective material if the number is called. Besides that, each student must pay full attention during the learning activities because at the end of the class, the lecturer will mention some randomized numbers and ask the respective students to answer some questions to create learning motivation (Zufriady, & Syahrilfuddin, 2017). Learning styles vary so that the lecturer must become a reliable facilitator in providing learning (Buchori, & Setyawati, 2015) as evidence that the teacher/lecturer is a professional person who has pedagogical and social skills as a capital for conducting classroom learning using the right learning model (Ghullam, & Yulianto, 2018). This is also based on a learning theory stating that learning principles must provide challenges to make students play an active role in the learning process (Andurrahman, 2008).

Learning models must be able to facilitate learning and attract students to enjoy learning (Adeleke & Gideon, 2018). In the learning process, *nomor acak* learning model emphasizes more on students for independent learning. It is actually not only a learning model, but also a good quality of learning emphasizing the teacher as a source of learning and as a facilitator in the classroom (Kristiana, & Hendriani, 2018). A teacher must also master the concept of knowledge about learning strategies to provide quality learning (Sakhiyya, Agustien, & Pratama, 2018). Professional development is related to the implementation of existing curriculum, curriculum standards and policies, knowledge, skills, and teacher beliefs. In particular, the focus of the content refers to professional development to improve teacher expertise related to the domain of teaching knowledge in different circumstances (Hamdu, Sopandi, & Nahadi, 2018). Therefore, a teacher as a curriculum implementer is challenged every day by attending the delivered curriculum without ignoring the written curriculum (Damovska, 2014).

A teacher as a learning manager has a central role in the success of teaching and learning process (Anggraeni, Sopandi, & Widodo, 2018). Teaching in the classroom must be responsive and open to students, so that communication in learning can be created (Lubis, 2018). Learning in the classroom must apply varied models to provide meaningful learning (Kurniaman & Noviana, 2017). Teachers are professional educators having essential tasks to educate, teach, guide, train, and evaluate their students, and must understand the way of learning in the classroom (Kurniaman, & Lazim, 2017). Student learning difficulties will appear differently and teachers must understand more about the character of students so that they are able to handle students' problems (Alsamiri, 2018). Learning models certainly have their own uniqueness and distinctiveness, thus the obligation of an educator must strive to improve and develop the learning models (Kurniaman, Charlina, & Noviana, 2018).

This model also provides an opportunity for all students to be active in each step of learning because numbers will be drawn on every occasion and no exception for numbers that have been randomized. For students who are not active in the learning process, when they get the random number, they must speak. If they do not speak, the number will be saved and asked to repeat for the following meetings. Any topic discussion will be appreciated even if it is the wrong answer, and then the number is randomized to determine someone who will correct the answer from their friend. After that, it will be corrected by the teacher. Randomizing this numbers can be conducted in several ways, either by making sweepstakes by writing numbers on paper or by using an Android application named "APP random number" with its variety of versions and forms. The purpose of this study was to see the effectiveness of *nomor acak* learning model in learning process at Primary Teacher Education (PGSD, *Pendidikan Guru Sekolah Dasar*) at one university in Riau.

METHODS

This research used a quasi-experimental study with the design of one group pretest-posttest, using an experimental class without a control class as a comparison (Sugiyono, 2009) that is depicted in the Figure 1 below.

O Pretest	→	**X** Treatment	→	**O** Posttest

Figure 1. Design One Group Pretest- Posttest.

The subject of this research consisted of three experimental classes with the number of class 18 A of 40 people, class 18 B of 39 people, and class 18 C of 40 people. Before conducting the learning process using *nomor acak* learning model, each class was given a pretest. Then, each of which was given *nomor acak* learning models and ended by a post-test. After the new data was obtained, it was analyzed by using a statistical calculation manually named Microsoft Excel 2010

RESULTS AND DISCUSSION

The data were obtained from the pretest and posttest learning using *nomor acak* learning model. Data obtained from the research are as follows:

Pretest Score Analysis

Initial Test (Pretest) is a test before being given treatment in the form of using *nomor acak* in the experimental class. The results of pretest of those three research classes are presented in the following Table 1:

Table 1. Pretest Learning Outcomes Data.

Data	Class	The Number of Students (n)	Average ($\bar{x}$)	Standard Deviation (s)	Variance (s^2)	Minimum Value	Maximum Value
Pretest	18 A	40	56.35	8.556	73.207	40	74
	18 B	39	58.25	7.499	56.248	40	70
	18 C	40	59.70	9.364	87.702	42	74

Table 1 above shows that before treatment, each class had the following average score of students' ability: class 18 A was 56.35, class 18 B was 58.25, and class 18 C was 59.70. To find out whether there was a significant difference or not, the normality and homogeneity of the test was conducted on the pretest and posttest score.

Posttest Score Analysis

Posttest score is a result of tests given to students after being treated. The purpose of the posttest is to determine the effect of the applied treatment to students. The final test results are presented the following Table 2.

Table 2. Posttest Learning Outcomes Data

Data	Class	The Number of Students (n)	Average ($\bar{x}$)	Standard Deviation (s)	Variance (s^2)	Minimum Value	Maximum Value
Posttest	18 A	40	64.10	9.681	93.733	30	82
	18 B	39	64.05	7.684	59.049	44	78
	18 C	40	66.80	8.779	77.087	44	80

Table 2 above shows that the average score of students' ability after treatment in class 18 A was 64.10, class 18 B was 64.05, and class 18 C was 66.80, showing that there were differences in the average of pretest and posttest score. The average learning outcome at pretest in class 18 A was 56.35, while its average learning outcomes at posttest was 64.10. The average student learning outcomes after receiving treatment using *nomor acak* learning model had increased.

Normality Test

The normality test was carried out after analyzing the initial and the final test score. The normality test for this data was conducted by using Kolmogorov-Smirnov. The normality test was used to determine whether pretest and posttest score data were normally distributed, with the following hypotheses being tested:

Ho: Pretest scores are normally distributed.

Ha: Posttest scores are not normally distributed.

In class 18 A, hypothesis testing used a significant level a = 0.05 and $\mathrm{D_{table}}$ = 0.210 with the following criteria:

If $\mathrm{a_{max}} \leq D_{\text{table}}$, then Ho is accepted, meaning data is normally distributed.

If $\mathrm{a_{max}} > \mathrm{D_{table}}$, then Ho is rejected, meaning the data is not normally distributed.

The results of calculating the normality test for class 18 A on the pretest and posttest is presented in the following Table 3.

Table 3. Results of Pretest and Posttest of Normality Test of Class 18 A.

Test	Normality			Decision
	N	a_{max}	D_{table}	
pretest	40	0.123	0.210	Normal
posttest	40	0.194	0.210	Normal

Table 3 above shows that the pretest score was a_{max}=0.123 and D_{table}=0.210 then a_{max}<D_{table} so that pretest data was normally distributed. The posttest score is a_{max} = 0.194 and D_{table} = 0.210, then a_{max}<D_{table} so that the posttest data was also normally distributed. Since $a_{max} \leq D_{table}$ for both data, the Ho hypothesis testing could be accepted.

In class 18 B, hypothesis testing used a significant level a = 0.05 and $\mathrm{D_{table}}$ = 0.222 with the following criteria:

If $\mathrm{a_{max}} \leq$ Dtable, then Ho is accepted, meaning data is normally distributed.

If $\mathrm{a_{max}} > \mathrm{D}$table, then Ho is rejected, meaning the data is not normally distributed.

The results of calculating the normality test of class 18 B on the pretest and posttest is presented in the following Table 4:

Table 4. Results of Pretest and Posttest of Normality Test of Class 18 B.

Test	Normality			Decision
	N	a_{max}	D_{table}	
pretest	39	0.136	0.222	Normal
posttest	39	0.143	0.222	Normal

Table 4 above shows that the pretest score of class 18 B was a_{max}=0.136 and D_{table}=0.222, then a_{max}<D_{table} so that pretest data was normally distributed. The posttest score was a_{max} = 0.143 and D_{table} = 0.222, then a_{max}<D_{table} so the posttest data was also normally distributed. Since a_{max}<D_{table} for both data, the Ho hypothesis testing could be accepted.

In class 18 C, hypothesis testing used a significant level a = 0.05 and D_{table} = 0.222 with the following criteria:

If $\mathrm{a_{max}} \leq$ Dtable, then Ho is accepted, meaning data is normally distributed.

If $\mathrm{a_{max}} > \mathrm{D}$table, then Ho is rejected, meaning the data is not normally distributed.

The results of calculating the normality test for class 18 C on the pretest and posttest is presented in the following Table 5.

Table 5. Results of Pretest and Posttest of Normality Test of Class 18 C.

Test	Normality			Decision
	N	a_{max}	D_{table}	
pretest	40	0.094	0.210	Normal
posttest	40	0.159	0.210	Normal

Table 5 above shows that the pretest score of class 18 C was a_{max}=0.094 and D_{table}=0.210, then a_{max}<D_{table} so that pretest data was normally distributed. The posttest score was a_{max} = 0.159 and D_{table} = 0.210, then a_{max}<D_{table} so the posttest data was also normally distributed. Since a_{max}<D_{table} for both data, the Ho hypothesis testing could be accepted. The learning outcomes of the three classes were tested for normality with normal decisions so that the pretest and posttest data homogeneity tests could be conducted.

Homogeneity Test

Based on the results of normality test, it is known that pretest and posttest scores of students were normally distributed. The next step was to test the variance homogeneity of pretest and posttest scores. The data of homogeneity testing was conducted by F test technique (Fisher) by comparing the largest and the smallest data variance. The formulation of hypothesis testing for variance homogeneity of pretest and posttest data in this research is as follows:

Ha: The variance of pretest/posttest score is homogeneous.

Ho: The variance of pretest/posttest score is not homogeneous.

In class 18 A with a significant level of a = 0.05, it was found that F_{table} was 1.73 with the following criteria:

If F_{count} < F_{table}, then Ha is accepted meaning the variance is homogeneous.

If F_{count} > F_{table}, then Ho is rejected, meaning the variance is not homogeneous.

The calculation results of variance homogeneity in pretest score of class 18 A is presented in the following Table 6.

Table 6. Homogeneity Test Results in Pretest and Posttest Scores of Class 18 A

Data	Homogeneity			Decision
	Variance	F_{count}	F_{table}	
Pretest	73.207	1.28	1.73	Homogeneous
Posttest	93.733			Homogeneous

Table 6 above shows that after conducting homogeneity test on pretest and posttest, the score was obtained F_{count} < F_{table} or 1.28 < 1.73 meaning that the variance is homogeneous.

In class 18 B with a significant level of a = 0.05, it was found that F_{table} was 1.74. Learning outcomes that had been tested for homogeneity are presented in the following Table 7.

Table 7. Homogeneity Test Results in Pretest and Posttest Scores of Class 18 B.

Data	Homogeneity			Decision
	Variance	F_{count}	F_{table}	
Pretest	56.248	1.04	1.74	Homogeneous
Posttest	59.049			Homogeneous

Homogeneity test on pretest and posttest scores with pretest variance was 56.248 and posttest was 59.049 with F_{count} 1.04 and F_{table} 1.74, concluded that $F_{count} < F_{table}$ or 1.04 < 1.74, with the decision of homogenous pretest data.

Furthermore, the homogeneity test of class 18 C was done by looking at the pretest and posttest scores. The results are presented in the following Table 8.

Table 8. Homogeneity Test Results in Pretest and Posttest Scores of Class 18 C.

Data	Homogeneity			Decision
	Variance	F_{count}	F_{table}	
Pretest	87.702	1.13	1.73	Homogeneous
Posttest	77.087			Homogeneous

Homogeneity test in class 18 C with pretest variance was 87.702 and posttest was 77.087 with F_{count} 1.13 and F_{table} 1.73 with homogeneous decisions because $F_{count} < F_{table}$ or 1.13 < 1.73.

The next step was to test the difference test on pretest and posttest to see whether there were differences from the learning outcomes of PGSD students at one university in Riau.

Difference Test

Based on the normality test and homogeneity test on pretest score and posttest score, it was found that the learning outcomes of students were normally distributed and homogeneous. Furthermore, a t-test was carried out to determine whether or not there was a significant difference between the average score of pretest and posttest. To analyze the difference between pretest and posttest scores of learning outcomes using pretest and posttest one group design, the following hypotheses were tested:

Ho: There is no significant difference between pretest and posttest of students.

Ha: There are significant differences between pretest and posttest of students.

In class 18 A, hypothesis testing used a significant level α = 0.05 and t_{table} = 2.0359 with the following criteria: $t_{count} \leq t_{table}$ then Ho is accepted and Ha is rejected. The results of t-test on pretest and posttest scores are presented in the following Table 9.

Table 9. T-test Results in Pretest and Posttest Scores.

Class	M_d	$\Sigma x^2 d$	N	dk(n-1)	t_{count}	α	t_{table}	Rejection	Conclusion
18 A	7.75	1577.5	40	39	7.707	0.05	2.0359	Reject H0	Significant
18 B	5.79	1750.36	39	38	5.331	0.05	2.0367	Reject H0	Significant
18 C	7.1	3303.6	40	39	4.879	0.05	2.0359	Reject H0	Significant

Table 9 above shows that by comparing t_{count} and t_{table}, α = 0.05 and dk = 39 of class 18 A, the table was consulted with the distribution t_{table} with dk = 39, obtained t_{table}= 2.0359, because t_{count} = 7.707 and t_{table}= 2.0359, it was concluded that $t_{count} > t_{table}$, then Ha hypothesis was proven significantly. In other words, there was a significant difference in the average score between pretest and posttest, so Ho was rejected. Besides that, by comparing t_{count} and t_{table}, α = 0.05 and dk = 38 of class 18 B, the table was consulted with the distribution t_{table} with dk = 38, obtained t_{table} = 2.0367, because t_{count}= 5.331 and t_{table}= 2.0367. It was concluded that $t_{count} > t_{table}$, then Ha hypothesis was proven significantly, In other words, there was a significant difference in the average score between pretest and posttest, so that Ho was rejected. Next, by comparing t_{count} and t_{table}, α = 0.05 and dk = 39 of class 18 C, the table was consulted with the distribution t_{table} with dk = 39, obtained t_{table} = 2.0359, because t_{count} = 4.879 and t_{table} = 2.0359. It was concluded that $t_{count} > t_{table}$, then Ha hypothesis was proven significantly. In other words, there was a significant difference in the average score between pretest and posttest, so that Ho was rejected.

Coefficient of Determination

The next analysis was to find the coefficient of determination. The coefficient of determination test was used to determine the magnitude of the influence and the percentage of *nomor acak* learning model on student learning outcomes.

Tabel 10. Class Coefficient of Determination.

Class	n	Pretest Average	Posttest average	Average Gain	r	KD
18 A	40	56.35	64.10	0.18	0.763	58.21%
18 B	39	58.25	64.05	0.14	0.600	36%
18 C	40	59.70	66.80	0.15	0.48	23%

The result of testing the coefficient of determination of class 18 A showed that the correlation coefficient of 0.763 had a strong influence on a coefficient of determination of 58.21%. This showed that *nomor acak* learning model had a strong influence on student learning outcomes as much as 58.21%. Meanwhile, the result of testing the coefficient of determination of class 18 B showed that the correlation coefficient of 0.600 had an adequate strong influence on a coefficient of determination of 36%. This showed that *nomor acak* learning model had a strong influence on student learning outcomes as much as 36%. At the same time, the result of testing the coefficient of determination of class 18 C showed that the correlation coefficient of 0.48 had an adequate influence on a coefficient of determination of 23%. This showed that *nomor acak* learning model had a strong influence on student learning outcomes as much as 23%. It is obviously seen that students were more active in reading learning process because they were waiting for the emerging number by using the android application in randomizing the numbers that would present the material.

The magnitude of increase in learning outcomes before and after treatment was given using *nomor acak* learning model calculated by a normalized gain formula. The results of an increase in score before pretest and after posttest were obtained, namely the number of students' pretest scores in class 18 A namely 2254 with an average of 56.35, then after obtaining a treatment using *nomor acak* learning model's posttest, the number of scores increased to 2564 with the average of 64.10 and the average index of gain of 0.18. In class 18 B, the number of students' pretest scores was 2272 with an average of 58.25, then after obtaining a treatment using *nomor acak* learning model's posttest, the number of scores increased to 2498 with the average of 64.05 and the average index of gain of 0.14. Besides that, in class 18 C, the number of students' pretest scores is 2388 with an average of 59.70, then after obtaining a treatment using *nomor acak* learning models' posttest, the number of scores increased to 2672 with the average of 66.80 and the average index of gain of 0.15.

Table 11. Analysis of Pretest and Posttest Improvement Results.

Class	*Pretest*	*Posttest*	Gain	Category
18 A	2254	2564	7.06	medium
18 B	2272	2498	5.58	
18 C	2388	2672	6.09	

The implementation of *nomor acak* learning model was motivated by the desire to improve the teaching and learning process aiming at improving the effectiveness of teaching and learning. Based on Trianto's theory (2013), the learning approach requires a process that emphasizes more active students. Theoretically, this development model is based on two theories, namely constructivism and the low of readiness of constructivism theory with the view that students are able to build their own skills knowledge. The theory of low of readiness was developed by Thorndike about learning readiness (Suwardi, 2016). Based on the research results, the data analysis on pretest score from 3 classes consisting of 119 students was an average of 58.1, standard deviation of 8.473, variance of 72.38, and the score of min 40 and max 74. Then, the data analysis on posttest score was an average on 64.98, standard deviation of 8.71, variance of 76.63, and the score of min 30 and max 82. Normality test data were normally distributed and homogeneous. Furthermore, a t-test was conducted to determine the differences in the ability of PGSD students by using *nomor acak* learning models and generating class 18 A data t_{count} (7.707) ≥ t_{table} (2,036), so that the ability of class 18 A

PGSD students had significant differences; class 18 B data t_{count} (5.331) ≥ t_{table} (2.0367), so that the ability of class B PGSD students had significant differences; class C data t_{count} (4.879) ≥ t_{table} (2.0359), so that the ability of class 18 C PGSD students had significant differences.

The coefficient of determination data aiming at observing the influence of *nomor acak* models on the effectiveness of PGSD students generated class 18 A data of 58.21%, class 18 B of 36%, and class 18 C of 23%. Furthermore, the improvement was conducted by Gain test and the results obtained the data of class 18 A was 7.06, class 18 B was 5.58, and class 18 C was 6.09 and generated the medium category. The learning model should provide meaningful activities and be able to contribute to students (Sagala, 2011). Learning is a change in perception and understanding, which is not always in the form of observable and measurable behavior, the learning process will run well if new subject matter or information adapts to the cognitive structure that one already has (Budiningsih, 2012). Learning that occurs in the classroom must facilitate one's intelligence (Hermita et al., 2017). Based on the results of research conducted at PGSD for six months in the basic art concept course in students of class 2018, the *nomor acak* learning model had an influence on increasing learning effectiveness

CONCLUSION

Based on the results of research on *nomor acak* learning model in increasing the learning effectiveness of PGSD students at one university in Riau, it can be said that it had an influence on learning effectiveness. This can be seen from the acquisition of processed data from 119 students treated by *nomor acak* learning model consisting of homogeneous classes 18 A, 18 B, and 18 C. *Nomor acak* learning model could create active learning and improve students' abilities cognitively because they were given responsibility for each material by memorizing the given numbers.

REFERENCES

Adeleke & Gideon, A. (2018). Teachers' familiarity and opinion on utilization of narrative recollection technique in basic schools in Nigeria. *International Journal of Innovative Research & Development, 7*(12), 37-42. DOI : 10.24940/ijird/2018/v7/i12/OCT18028.

Alsamiri, Y. (2018). How Learning Disabilities Teachers in the Kingdom of Saudi Arabia Define Students with Giftedness and Learning Disabilities. *Cakrawala Pendidikan, XXXVII*(3), 356-365.

Andurrahman. (2008). *Belajar dan Pembelajaran*. Bandung: Alfabeta.

Anggraeni, P., Sopandi, W., & Widodo, A. (2018). Profil pertanyaan inkuiri guru pada pembelajaran IPA di Sekolah Dasar. *Mimbar Sekolah Dasar*, 5(2), 75-86. doi:http://dx.doi.org/10.17509/mimbar-sd.v5i2.11441.

Buchori, A., & Setyawati, R. D. (2015). Development learning model of character education through e-comic in elementary school. *International*

Journal of Education and Research, 3(9), 369- 386.

Budiningsih, C. A. (2012). *Belajar dan Pembelajaran.* Jakarta: Rineka Cipta.

Damovska, L. (2014). Curriculum leadership: Strategies for linking the written and delivered curriculum. *(IJCRSEE) International Journal of Cognitive Research in Science, Engineering and Education, 2*(1), 63-68.

Hamdu, G., & Yulianto, A. (2018). The ability of prospective elementary school teachers to develop student worksheets on Context-Based Science Learning. *Mimbar Sekolah Dasar, 5*(3), 155-161. doi:http://dx.doi.org/10.17509/mimbar-sd.v5i3.14503.

Hamdu, G., Sopandi, W., & Nahadi. (2018). Debriefing program for prospective elementary school teachers in developing learning aids. *International Journal of Learning, Teaching and Educational Research, 17*(6), pp. 112-126. https://doi.org/10.26803/ijlter.17.6.7.

Kurniaman, O., & Noviana, E. (2017). Penerapan Kurikulum 2013 dalam meningkatkan keterampilan, sikap, dan pengetahuan. *Jurnal Primary: Pendidikan Guru Sekolah Dasar,* 6(2), 389- 396.

Kurniaman, O., & N. Lazim. (2017). Implementasi Kurikulum 2013 di kelas II SD Negeri 079 Pekanbaru. *Jurnal Tunas Bangsa, 4*(2), 185- 197.

Kurniaman, O., Charlina & Noviana, E. (2018). *Implementation DRTA Strategy for Elementary School*. Beau Bassin: Lambert Academic Publishing.

Kristiana, I. F., & Hendriani, W. (2018). Teaching efficacy in Inclusive Education (IE) in Indonesia and other Asia, developing countries: A systematic review. *Journal of Education and Learning (EduLearn), 12*(2), pp. 166~171.DOI: 10.11591/edulearn.v12i2.7150.

Lubis, A. H. (2018). Reflective teaching toward EFL teachers' professional autonomy: Revisiting its development in Indonesia. *International Journal of Education, 11*(1), 35-49. doi: http://dx.doi.org/10.17509/ije.v11i1.9400.

Hermita, N., Hamid, R., Adiputra, M. J., & Samsudin, A. (2017). *Pembelajaran Berbasis Kecerdasan Jamak di SD.* Yogyakarta: Deepublish.

Sugiyono. (2009). Metode *Penelitian* Kualitatif*, Kuantitatif dan R&D*. Bandung: Alfabeta.

Suwardi. (2016). *Cara belajar efektif dan efisien.* http://akpergshwng.ac.id/index.php/2-uncategorised/67-cara-belajar-efektif-dan-efisien (diakses 8 Juni 2017).

Sagala, S. (2011). *Konsep dan Makna* Pembelajaran. Bandung: Alfabeta.

Sakhiyya, Z., Agustien, H. I. R., & Pratama, H. (2018). The reconceptualisation of knowledge base in the pre-service teacher education curriculum: Towards ELF pedagogy. Indonesian *Journal of Applied Linguistics, 8*(1), 49-56. doi: 10.17509/ijal.v8i1.11464.

Trianto. (2013). *Mendesain Model Pembelajaran Inovatif Progresif:* Konsep *Landasan* dan *Implementasinya pada Kurikulum Tingkat Satuan Pendidikan (KTSP).* Jakarta: Kencana Prenada Media Group.

Zufriady., Syahrilfuddin., Santika, R., & Yohana, R. (2018). Using *Nomor Acak* Learning Models of Physics Students in the FKIP of Riau University. *Proceeding of the 2nd URICES, 2018, Pekanbaru, Indonesia.* 551- 557. Pekanbaru: FKIP Universitas Riau.

Zufriady, & Syahrilfuddin. (2017). Development of *Nomor Acak* Learning Models to Increase Student's Learning Effectivity at PGSD FKIP University of Riau. *Proceeding of the 1nd URICES, 2017, Pekanbaru, Indonesia.* 486-492. Pekanbaru: FKIP.