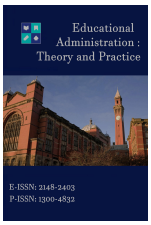
Kuram ve Uygulamada Eğitim Yönetimi
Educational Administration: Theory and Practice
2023, Cilt 29, Sayı 2, ss: 102-115
2023, Volume 29, Issue 2, pp: 102-115
www.kuey.net



Correlation of the Use of a Science Teaching Tool for Elementary School Students

N Nadrah [1*]

Article History

Article Submission
12 November 2022
Revised Submission
14 December 2022
Article Accepted
15 February 2023

Abstract

This study aims to determine the correlation between the utilization of science tools and the learning objectives of class VI students of UPT SPF SD (Elementary School) Inpres Cilalang Makassar. The research method is descriptive and quantitative and the population of this research is the students of class VI of UPT SPF SD (Elementary School) Inpres Cilallang Makassar. The entire population is used as the research sample. So, this research includes population research which is also a sample. The technique used is the total sample technique. Research data were obtained by conducting research tests and questionnaires. The data obtained were analyzed using product moment analysis techniques. The results showed that the research hypothesis that reads "There is a correlation between the utilization of science tools and learning objectives of class VI UPT SPF students SD (Elementary School) Inpres Cilalang Makassar" is accepted at the 5% confidence levels. The acceptance of the research hypothesis at the 5% confidence level is an indication that the more often science tools are used, the more likely it is to achieve learning objectives, especially in science subjects. For this reason, it is recommended to intensify the use of science tools in science teaching.

Keywords: Correlation; Elementary School; Science Teach; Science Tools; Learning Objectives;

[1*] *Doctor, Department of Elementary Teacher Education, Universitas Muhammadiyah Makassar, Kota Makassar, Indonesia, nadrah@unismuh.ac.id*

Introduction

The need for Natural Science has been proven from the many studies that have been and will be done by para experts on the development of civilization man (D. Hillmayr, L. Ziernwald, F. Reinhold, S. I. Hofer, and K. M. Reiss, 2020). Various types of study, experiment, test technological products, and observation of natural or environmental phenomena, all of which are based on a desire to develop Natural Sciences. Therefore, natural science lessons are very important for students (A. Otterborn, K. Schönborn, and M. Hultén, 2019). This subject begins to be taught at the elementary school level, with the aim that students can get to know nature's surroundings and make proper use of it and increase their love for nature and all contents (Checa & Bustillo, 2020; Susilawati & Supriyatno, 2020).

Teaching aids are materials created by the teacher or students from readily available sources to educate or teach concepts that are simple for students to understand and function as tools in the learning process (Park & Kim, 2020; Jafari, Aghaei, & Khatony, 2019). The purpose of this tool is to make it simpler to develop learning abilities. Simple substances that are readily available, even from old materials, can be used to make science education teaching aids that correspond to the principles presented at a reasonable price (Subhash & Cudney, 2018; Salloum, Qasim Mohammad Alhamad, Al-Emran, Abdel Monem, & Shaalan, 2019). Experience has shown that employing teaching aids to teach science helps students meet their learning objectives more successfully than doing so without them. Props are used to introduce or serve as a bridge for learning messages (Regmi & Jones, 2020; Jailani et al., 2017). When using visual assistance, you must maximize students use all five senses to increase the efficacy of their learning through hearing, seeing, feeling, and employing their reasoning in a realistic and logical way (Viberg, Hatakka, Bälter, & Mavroudi, 2018; Zhonggen, 2019). Teaching Natural Sciences or Science at the Elementary School level starts with an introduction to nature and existing phenomena originating from nature, such as rain, alternation of day and night, earthquakes, volcanoes, sound waves, propagation sound, water flow, parts body man, animals, and plants (D. D. Liebowitz and L. Porter, 2019). Students also study and observe various things related to knowledge Natural (Saqr & Alamro, 2019; Aldowah, Al-Samarraie, & Fauzy, 2019). This is consistent with (Nurfa, 2012), which found that using graphic representations of the human respiratory system can boost students' engagement, drive, and academic performance in junior high school VIII grade.

The employment of instructional tools is consistent with humanistic theory (D. Bevilacqua et al, 2019). The learner's understanding of both his surroundings and himself is regarded as evidence that the learning process has achieved its goal, in accordance with humanistic thought. Students must work hard during their educational journey to become as self-actualized as they can (Mazana, Montero, & Casmir, 2018; Schleder, Padilha, Acosta, Costa, & Fazzio, 2019). The goal of this learning theory is to comprehend learning activity from the viewpoint of the offender rather than the observer (Sailer & Homner, 2020; Baber, 2020; Azizi, Soroush, & Khatony, 2019). The teacher's major objective is to assist the student in developing himself, specifically to assist each person in understanding who they are as distinct individuals and in realizing their own potential (Sukendro et al., 2020; Zainuddin, Shujahat, Haruna, & Chu, 2020). The material is arranged in such a way in the curriculum based on the level of education. Lessons or the knowledge gained is very useful in undergoing a higher level of education (S. Keskin and H. Yurdugül, 2019). Because of that, field studies knowledge Natural (science education) urgent studied students, especially School Base which is considered the first and foremost facility for every child to gain lessons, knowledge, and an introduction to nature in a manner educative. The application of science education, on the other hand, must be done carefully in order to safeguard and maintain a sustainable ecosystem. It is suggested that in addition to attempting great learning, science education should always pay attention to safety and environmental sustainability (C. Romero and S. Ventura, 2020). As a result, to ensure continuity it is essential to build alternative devices through science education through the practicum. Environmental considerations can be given proper and steady attention during science practice (Kioupi & Voulvoulis, 2019; Abbas, Aman, Nurunnabi, & Bano, 2019).

In teaching natural sciences, facilities, and infrastructure as well as natural science teaching aids are needed for the sake of concretization of the subject matter (Bond, Buntins, Bedenlier,

Zawacki-Richter, & Kerres, 2020; Hussain, Zhu, Zhang, & Abidi, 2018). The use of science teaching aids is intended so that students can recognize closely and concretely the object being studied. Students not only learn from books, but can look at live things which meant (Ramadhani, Rofiqul, Abdurrahman, & Syazali, 2019; Fauth et al., 2019). Students not only learn the processes happening in something incident natural, like water flowing from a place that is tall to another place which low, but also could observe and prove it through practice science education. Because that tool displays science education expected could Upgrade achievement study student (Amir et al., 2020; Binyamin, Rutter, & Smith, 2019). The problems in this research are as follows, based on the problem identification that was previously stated. (a) How applicable is the junior high school scientific learning 2013 curriculum to the Deep Environment Oriented science education? (b) Does the practical application of an environmentally focused science education to assist science learning actually improve the standard of science instruction at SD Inpres Cilallang Makassar?

Empirical experience shows that in the teaching and learning process, science lessons are taught without assistance from science teaching aids, and students often show facial expressions not understanding the subject matter through the teacher repeatedly explained (L. Cheng, A. D. Ritzhaupt, and P. Antonenko, 2019). When using science teaching aids, students seem to quickly understand the lesson. In this case, the use of these props is intended to further concretize the subject matter being taught (Ansari & Khan, 2020; Zainuddin, Chu, Shujahat, & Perera, 2020). This indicates that the use of visual aids in science subjects can help speed up understanding student to material lesson taught (W. S. Basri, J. A. Alandejani, and F. M. Almadani, 2018). Thereby, the use of tools in displaying science education is suspected of upgrading the achievements of study students, specifically in field studies, and science education guesses the courses need to prove the truth. Because of that, the study is done with the aim to get an overview of the correlation of the use of science tools with the learning objectives of class VI students UPT SPF SD (Elementary School) Inpres Cilalang Makassar.

Literature Review

Correlation

A technique for figuring out how a trend curve has changed is sometimes referred to as the regression approach. Regression analysis is utilized with accurate results and relatively straightforward calculations (J. Metsämuuronen, 2020). Regression analysis is used to manage large amounts of historical data. Regression is one of the most popular data mining methods for determining the degree of correlation between the dependent variable or effect and the independent or causative factors. There are two categories for regression analysis, namely:

A) Basic Regression

The simplest regression model, with just one independent variable X, is a basic linear regression model. Predicting the dependent variable Y is one of the many applications of regression analysis (J. Lindahl, C. Colliander, and R. Danell, 2020).

The simple linear regression model's equation is as follows:

$Y = a + bX$

The intercept, or value of Y when X = 0, and the slope, or change in average Y for a change in one unit of X, are the independent and predicted variables, respectively. The values of the coefficients a and b are a and b, respectively, where an is the slope and b is the intercept.

B) Number Of Linear Regression

Indeed, multiple linear regression analysis is simply simple linear regression with extra independent variables. In general, they are the same:

$Y = a + b1\ X1 + b2\ X2 + bn\ Xn.$

A constant (intercept) and b, the regression coefficient on each independent variable, is present where Y is the independent variable and X is the independent variable. Analysis of multiple linear regressions needs concurrent independent testing using F count. Regression is a

way of decision-making that is frequently used in the creation of mathematical models in this calculation where the regression is directly associated with the correlation, where every regression must have a correlation, but not every correlation can advance to the regression process. Development Fast technological advancements need accurate mathematical models that will speed up the process of determining the key factors, making estimates, and designing simulation projects. The two variables in the regression approach are:

1. The variable response/dependent variable, which is the variable whose existence is impacted by other variables, with the variable Y serving as a marker.

2. Predictor Variables / Independent Variables are independent variables, or variables that are not affected by other variables, and are indicated by the variable X.

Science Learning

Science was created as a lesson in integrative science, not as a field of study. Ability to think analytically, learn new things, be curious, and have a caring and responsible attitude toward the natural and social world (Y. F. Narut and K. Supradi, 2019). In other words, acquiring science imparts knowledge, attitudes, character, and abilities that are taught in an integrated manner, among other things. Media use and science education are inextricably linked, yet current teaching aids and media are not up to speed with what the government considers to be integrated natural science content (N. Najamuddin, S. Sahrip, K. W. A. Siahaan, W. Yunita, and R. Ananda, 2022). Several presumptions contend that science is a challenging subject that involves a lot of theory, dull learning, and the use of less inventive media and teaching techniques that will make students less interested in science but lazy to learn science, hence decreasing pupils' interest in science (D. V. Abduramanova, 2020). Interest is capital when motivation is first developing. Science education includes a strong focus on materials and processes and is based on Bloom's Taxonomy's three domains: cognitive, affective, and psychomotor (Ningsih and G. K. Jha, 2021).

In reality, domain-based learning is not holistic or balanced; it typically only concentrates on the cognitive domain's goals while avoiding those of the emotive domain, resulting in learning: (1) Disappointing, leading to a negative attitude toward science subjects; (2) Passive, dominated by teacher lectures; (3) Monotonous, lacking in chances for the development of creativity; and (4) Ineffective, failing to make the most use of the time allotted for achieving student competency using science Students are supposed to learn based on five domains for science education, improving their knowledge and skills as well as their attitudes about science itself and its surroundings. They are also encouraged to actively use and connect science in their daily lives.

Science Teaching Tool

The organization of subject matter focus for educational purposes is accomplished through the use of teaching materials. Sequencing, which refers to making the order of presentation of material learnable, and synthesizing, which refers to efforts to show students the connections between facts, concepts, procedures, and principles contained in the learning material, are both components of the strategy for organizing learning materials (J. M. Campillo-Ferrer, P. Miralles-Martínez, and R. Sánchez-Ibáñez, 2020). Teaching materials include systematic explanations of learning objectives, encourage active participation in learning, and provide an opportunity for students' unique differences in all forms of heterogeneity. There are several types of teaching resources that are frequently used, including printed teaching materials, audio, video, interactive multimedia, and web-based teaching resources. Textbooks or textbooks, modules, handouts, LKS, brochures, and pamphlets are examples of printed teaching resources (M. S. Zuhrie, I. Basuki, B. Asto, and L. Anifah, 2018).

Radio, vinyl records, and audio CDs are all examples of audio instructional resources. Films and video CDs are included in the audio-visual instructional materials. There are many different kinds of teaching materials, including printed teaching materials, visual teaching materials, audio-visual teaching materials, multimedia teaching materials, and real things.

Methodology

The research variable is as follows:

Use tool display science education in teaching knowledge Natural as the independent variable

Aim learning class student VI UPT SPF SD Inpres Cilalang Makassar as the dependent variable.

The research design was structured to obtain data regarding the object under study, namely the use of media science teaching aids and learning achievement of class VI UPT SPF SD Inpres Cilallang Makassar. This research includes study experimental (P. Pandey and M. M. Pandey, 2021). The study started with observation on location study, that is UPT SPF SD Inpres Cilalang Makassar as the dependent variable. The goal is to obtain data about student circumstances and the usage of media tool to display science education.

Furthermore, the author teaches science subjects using science teaching aids, which is done in four meetings. At the end of the meeting, a science subject test was carried out to obtain data about the learning achievement of students who are taught using science tools. Apart from the science education test, it was also distributed questionnaire as an instrument to obtain data about student responses in relation to the use of tools for science demonstration in science teaching. The data obtained from this study were analyzed using techniques of product-moment correlation, namely, to obtain an overview of the correlation between the use of science teaching aids with aim learning, that is achievement study student which adequate on eye lesson science education (H. Korpershoek, E. T. Canrinus, M. Fokkens-Bruinsma, and H. de Boer, 2021).

The research population is all individuals in a group of students studied. The population of this study was students of class VI UPT SPF SD Inpres Cilallang Makassar, consisting of 67 students. That the more he explained could be seen in Table 1.

Table 1. Class VI UPT SPF SD Inpres Cilalang Makassar as Population

NO.	**Class**	**Total Students**
1	VI/A	32
2	VI /B	35
Total	67	

Source: SD Inpres Cilalang Makassar

The sample is part of the population that is considered representative of the entire population, however in the study no sample was used because the total population still could be reached. Thereby, this study includes the study on population which at a time becomes the sample study. Techniques used to obtain data study are as follows:

Test

To obtain data about student learning outcomes in science subjects, a post-process test was carried out to learn how to teach using tool display science education. The instrument consists of 20 numbers arranged in essay form. The test material was taken from a science textbook for class VI students at UPT SPF SD Inpres Cilallang Makassar.

Questionnaire

Use a questionnaire intended to obtain data about using tool display science education in teaching eye lessons in class VI UPT SPF SD Inpres Cilalang Makassar. Through questionnaires obtained also information about students' responses to the use of visual aids in learning science (S. Papadakis, J. Vaiopoulou, M. Kalogiannakis, and D. Stamovlasis, 2020). Next, a questionnaire assessment was carried out with method set score on every option (choice answer) as follows:

Choice (a): given weight mark 4

Option (b): given weight mark 3

Choice (c): given weight mark 2

Choice (d): given weight mark 1

For counting the score in the questionnaires obtained from students, the total score obtained is shared with the whole questionnaire. Results distribution indicates the score student gave in the

questionnaire. Data obtained was tabulated and next analyzed with the use of correlation analysis technique product moment with the formula as follows:

$$R_{XY} = \frac{\sum xy - \frac{(\sum x)\sum y}{N}}{\sqrt{\left\{\sum x^2 - \frac{(\sum x)^2}{n}\right\} x \left\{\sum y^2 - \frac{(\sum y)^2}{n}\right\}}} \quad (1)$$

The meaning of each symbol in the formula above is as follows:

Rxy: Coefficient correlation among variable X and variable Y.

X: Variable the use of science teaching aids in teaching science subjects.

Y: Mark student on eye lesson science education.

X2: Student square of the total variable.

XY2: Square from total variable Y.

N: Total students which were researched.

Results

Presentation Results Analysis Data

This study intends to determine the correlation between the use of science teaching aids and objective learning. This meant the aim of learning is the score student gave on test eye lesson science education carried out after the science learning process by using science teaching aids. With Thus, the data needed in this study is the student's response to the use of visual aids in science education as variable X and the results of the study on eye lesson science education as variable Y. The statistics present in Format Data Analysis with Correlation (Table 2).

Table 2. Format Data Analysis with Correlation

No.	Score Student	
	Questionnaire (Group X)	Test (Group Y)
1	2,4	7,5
2	3,5	8,5
3	3,3	8
4	3,3	8
5	3,3	8,3
6	3,3	8,2
7	2,9	7,3
8	2,9	7,3
9	2,8	7,3
10	2,9	7,5
11	3,3	8,0
12	3,3	8,0
13	2,9	7,5
14	2,9	7,5
15	3,5	8,3
16	3,5	8,2
17	2,9	7,4
18	2,7	7,0
19	3,5	8,5
20	3,5	8,5
21	2,1	6,6
22	3,5	8,4
23	2,0	6,5
24	3,0	7,7
25	3,2	7,8
26	2,2	6,5
27	2,8	7,7

No.	Score Student	
	Questionnaire (Group X)	**Test (Group Y)**
28	2,8	7,8
29	3,6	8,5
30	2,9	7,9
31	2,8	7,6
32	3,3	8,0
33	3,4	8,2
34	3,5	8,5
35	2,4	7,0
36	2,3	6,5
37	3,0	7,5
38	3,0	7,6
39	3,1	7,8
40	2,4	7,4
41	2,4	7,0
42	2,3	6,5
43	2,7	6,7
44	2,2	6,6
45	2,8	7,5
46	2,8	7,8
47	2,4	7,0
48	2,8	7,7
49	2,8	7,5
50	3,3	8,0
51	3,3	8,0
52	2,9	7,7
53	2,1	6,5
54	2,2	6,7
55	2,1	6,6
56	2,7	7,5
57	2,7	7,5
58	2,7	7,7
59	2,1	6,6
60	3,3	8
61	2,4	7
62	3,3	8
63	2,8	7,7
64	2,7	7,5
65	2,9	7,8
66	2,4	7
67	2,9	7,7

Based on the analysis data variable X as the tool displays science education and variable Y is the results study from lesson science, so obtained chart to look for the coefficient relation between variable X and variable Y, as follows (Figure 1):

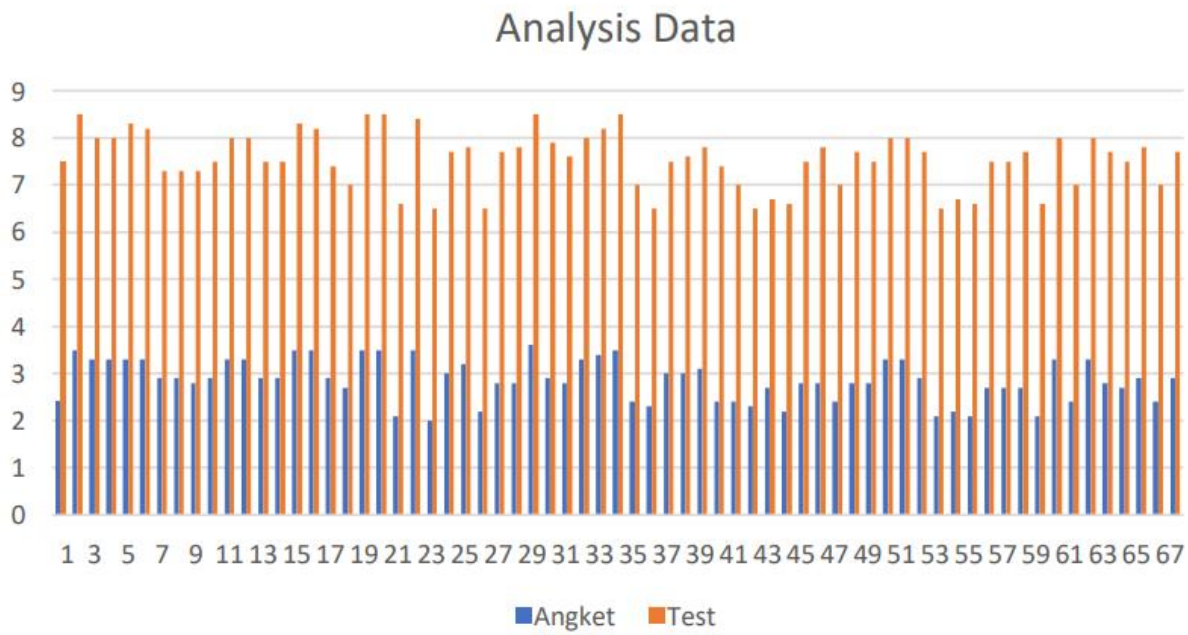


Figure 1. Chart Analysis Data and Correlation

The data in Table 2 above are followed up to find the correlation coefficient between the use of the tool science demonstration (Group X) and student learning outcomes (Group Y). The table to find the correlation coefficient is as follows (Table 3):

Table 3. Table Work Coefficient Correlation among Group X and Group Y

No.	X	Y	X2	Y2	XY
1	2,9	7,5	8,41	56,25	21.75
2	3,5	8,5	12.25	72.25	29.75
3	3,3	8	10.89	64	26,4
4	3,3	8	10.89	64	26,4
5	3,3	8,3	10.89	68,89	27,39
6	3,3	8,2	10.89	67,24	27.06
7	2,9	7,3	8,41	53,29	21,17
8	2,9	7,3	8,41	53,29	21,17
9	2,8	7,3	7,84	53,29	20,44
10	2,9	7,5	8,41	56,25	21.75
11	3,3	8	10.89	64	26,4
12	3,3	8	10.89	64	24,6
13	2,9	7,5	8,41	56,25	21.75
14	2,9	7,5	8,41	56,25	21.75
15	3,5	8,3	12.25	68,89	29.05
16	3,5	8,2	12.25	67,24	28,7
17	2,9	7,4	8,41	54,76	21.46
18	2,7	7	7,29	49	18,9
19	3,5	8,5	12.25	72.25	29.75
20	3,5	8,5	12.25	72.25	29.75
21	2,1	6,6	4,41	43,56	13.86
22	3,5	8,4	12.25	70,56	29,4
23	2	6,5	4	42.25	13
24	3	7,7	9	59,29	23,1
25	3,2	7,8	10,24	60,84	24.96
26	2,2	6,5	4.84	42.25	14,3
27	2,8	7,7	7,84	59,29	21.56

No.	X	Y	X2	Y2	XY
28	2,8	7,8	7,84	61,84	21.84
29	3,6	8,5	12.96	72.25	30,6
30	2,9	7,9	8,41	62,41	22.91
31	2,8	7,6	7,84	57,76	21,28
32	3,3	8	10.89	64	26,4
33	3,4	8,2	11.56	67,24	27,88
34	3,5	8,5	12.25	72.25	29.75
35	2,4	7	5,76	49	16,8
36	2,3	6,5	5,29	42.25	14.95
37	3	7,5	9	56,25	22.5
38	3	7,6	9	57,76	22,8
39	3,1	7,8	9,61	60,84	24,18
40	2,4	7,4	5,76	54,76	17,76
41	2,4	7	5,76	49	16,8
42	2,3	6,5	5,29	42.25	14.95
43	2,7	6,7	7,29	44.89	18.09
44	2,2	6,6	4.84	43,56	14.52
45	2,8	7,5	7,84	56,25	14.52
46	2,8	7,8	7,84	60,84	21.84
47	2,4	7	5,76	49	16,8
48	2,8	7,7	7,84	59,29	21.56
49	2,8	7,5	7,84	56,25	21
50	3,3	8	10.89	64	26,4
51	3,3	8	10.89	64	26,4
52	2,9	7,7	8,41	59,29	22,33
53	2,1	6,5	4,41	42.25	13.65
54	2,2	6,7	4.84	44.89	14.74
55	2,1	6,6	4,41	43,56	13.86
56	2,7	7,5	7,29	56,25	20,25
57	2,7	7,5	7,29	56,25	20,25
58	2,7	7,7	7,29	59,29	20.79
59	2,1	6,6	4,41	43,56	13.86
60	3,3	8	10.89	64	26,4
61	2,4	7	5,76	49	16,8
62	3,3	8	10.89	64	26,4
63	2,8	7,7	7,84	59,29	21.56
64	2,7	7,5	7,29	56,25	20,25
65	2,9	7,8	8,41	60,84	22,62
66	2,4	7	5,76	49	16,8
67	2,9	7,7	8,41	59,29	22,33
∑	X=192,4	Y=506,1	X 2 = 565.02	Y 2 = 3845.63	XY=1462,79

Based on the calculation of the results in Table 3, that is known as follows:

$$R_{XY} = \frac{\sum xy - \frac{(\sum x)\sum y}{N}}{\sqrt{\left\{\sum x^2 - \frac{(\sum x)^2}{n}\right\} x \left\{\sum y^2 - \frac{(\sum y)^2}{n}\right\}}} \quad (2)$$

$$= \frac{1462.79 - \frac{(192.4)(506.1)}{67}}{\sqrt{\left\{565.02 - \left(\frac{192.4}{67}\right)^2\right\} x \left\{3845.63 - \frac{(506.1)^2}{67}\right\}}} \quad (3)$$

$$= \frac{1462.79 - \frac{97373.64}{67}}{\sqrt{\left\{565.02 - \frac{(37017.76)}{67}\right\} x \left\{3845.63 - \frac{(256137.21)}{67}\right\}}} \quad (4)$$

$\sum X$ = 192.4

$\sum Y = 506.1$

$\sum X2 = 565.02$

$\sum Y2 = 3845.63$

$\sum XY = 1462.79$

N = 67

Furthermore, searching for a coefficient correlation between variable X and variable Y is as follows:

$$= \frac{1462.79 - 1453.33791045}{\sqrt{\{565.02 - 552.503880597\}x\{3845.63 - 3822.94343284\}}} \quad (5)$$

$$= \frac{9.45208955}{\sqrt{283.947783419}} \quad (6)$$

$$= 0.561 \quad (7)$$

Based on the calculation, it noted that the mark coefficient correlation among use device science education with aim learning (Group X) and results study student (Group Y) or mark r-count is 0.561. Following is the chart from the total calculation results (Figure 2).

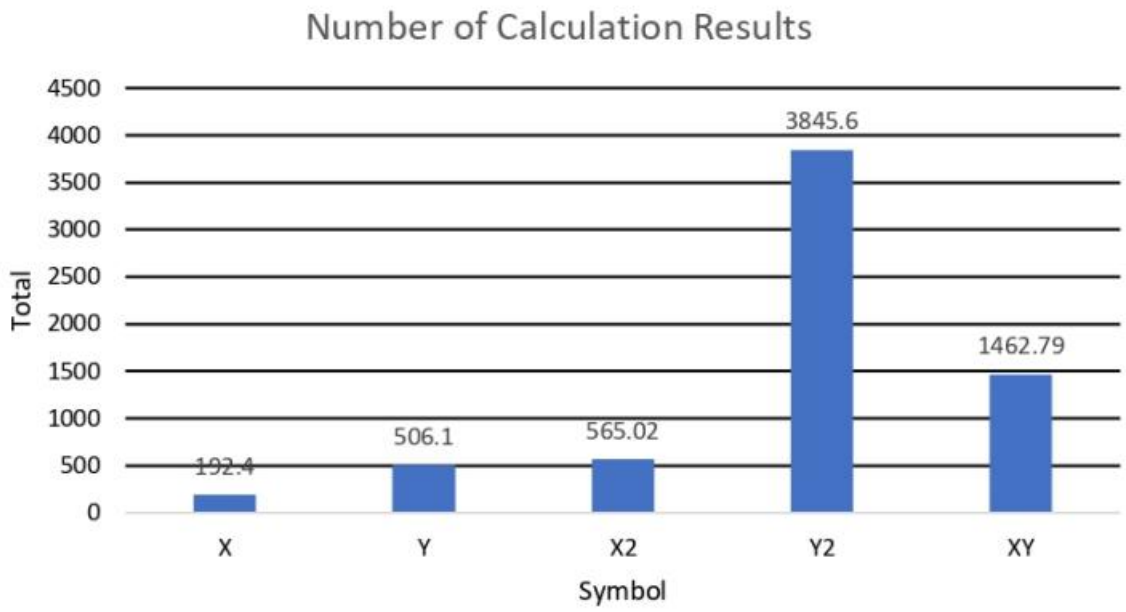


Figure 2. Chart Number of Results Calculation

Discussion

The result of the data analysis shows that the value of the correlation coefficient between the use of tools Science with learning objectives in class VI UPT SPF SD Inpres Cilallang Makassar is 0.561. For the purpose of testing the research hypothesis, the r-count value is compared to the r-table value at the level of confidence of 5%. The criteria used are as follows:

Hypothesis accepted if the mark r-count is bigger than the mark r-table.

Hypothesis rejected if the mark r-count is smaller than the mark r-table.

The r-count value obtained is 0.561, while the r-table value is 0.244. Thus, the value r-count is 0.317 higher than the r-table value. This means that the first criterion, so the hypothesis study which reads "There is correlation Among use tool display science education with aim learning on student class VI UPT SPF SD Inpres Cilallang Makassar" is accepted. In this case, it can be concluded that if the device tool science education is used in the processes of learning how to teach, so big possibility will achieve the aim of learning, that is achievement of learning outcomes which

adequate.

Conclusion

After the study on the connection of using tools to display science education with the aim of learning on class VI students of UPT SPF SD Inpres Cilalang Makassar, it could be concluded as follows: The correlation coefficient value is 0.317 higher than the r-table value. This shows that the research hypothesis which reads "There is a correlation between the use of science teaching aids with learning objectives in class students VI UPT SPF SD Inpres Cilalang Makassar" is accepted. Using device tools to display science education in a manner with intensive promising hope will achieve the aim of learning. If the tool science education is used intensively deep teaching-learning process, then the results of study students will increase. There exists a relationship between the use of tool to display science education with learning objectives.

Acknowledgement

We thank the principals and teachers at SD Inpres Cilallang Makassar for giving permission to conduct research and supporting us in conducting research to improve determining the correlation between the use of science tools and the learning objectives of class VI students of UPT SPF SD (Elementary School) Presidential Instruction Cilalang Macassar. We also thank the students of class VI who are willing to take part in learning and are active in the classroom, making it easier for us to do research.

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