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THE CONTRIBUTION OF USING CHART TO STUDENTS' ACHIEVEMENT IN WRITING CAUSE AND EFFECT PARAGRAPHS

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Abstract

This study was attempted to find out the contributions of using chart to students' achievement in writing cause and effect paragraphs to the third semester of Management students of Universitas Prima Indonesia, Medan, 2019/2020. The research of this study was a quasi experiment design. There were 56 students taken randomly from two classes then divided into two groups; experimental group and control group. The experimental group was taught by using chart to achieve their writing, while control group was taught in a conventional way; without using chart. The collected data were analyzed by using t-test formula. The reliability of the experimental group was 0.42, and the reliability of the control group's test was 0.74. The analysis showed that the score of the students by using chart were different significantly from those students without using chart. The result of t- calculation showed that t-observe is 9.8 and the t-observe is bigger than t-table ($9.8 > 1.671$: $p = 0.05$). It means that using chart significantly contributes the the students' achievement in writing cause and effect paragraphs. In other words, the hypothesis which said that "there is a significant contribution of using chart to students' achievement in writing cause and effect paragraphs" is accepted.

Keywords: *contribution, chart, student's achievement, writing cause and effect paragraphs*



Abstrak

Penelitian ini dilakukan untuk menemukan kontribusi penggunaan grafik pada peningkatan siswa dalam menulis paragraf sebab akibat terhadap siswa manajemen semester ketiga di Universitas Prima Indonesia, Medan, 2019/2020. Penelitian ini menggunakan desain quasi eksperimen. Ada 56 siswa diambil secara acak dari dua kelas, kemudian dibagi menjadi dua grup; grup eksperimen dan grup kontrol. Grup eksperimen diajarkan dengan menggunakan grafik, sedangkan grup kontrol diajarkan dengan metode konvensional; tanpa menggunakan grafik. Data yang terkumpul dianalisa menggunakan rumus t-test. Reliabilitas grup eksperimen adalah 0,42, dan reliabilitas grup kontrol adalah 0,74. Analisa menunjukkan bahwa skor siswa yang menggunakan grafik berbeda secara signifikan dengan skor siswa yang tidak menggunakan grafik. Hasil dari kalkulasi menunjukkan bahwa t-observasi adalah 9,8 dan t-observasi lebih besar dari t-table ($9.8 > 1.671 : p = 0.05$). Ini berarti bahwa penggunaan grafik secara signifikan berkontribusi pada peningkatan siswa dalam menulis paragraf sebab akibat. Dengan kata lain, “bahwa ada kontribusi penggunaan grafik pada peningkatan siswa dalam menulis paragraf sebab akibat” diterima.

Kata kunci: *kontribusi, grafik, peningkatan siswa, menulis paragraf sebab akibat.*

Introduction

Language skills consist of listening, speaking, reading, and writing. Of the four language skills, writing is the very difficult one to be mastered, because it crucially requires much information from previous experiences, as Allan and Vallette (1977:248) observed.

Chart is a convenient way to show the data clearly for the readers. According to Arsyad (2002:89), chart is a visual media which is used to transform the information from writers to readers. Moreover, Sadiman (2003:35) states that chart looks like the visual summary of a process, event, or certain object with detail data and information.

There are some kinds of chart which are often used to show data. Each of the charts has its function ([http://leads.ac.uk/languages resource English graphs. 11 February 2004](http://leads.ac.uk/languages_resource/English_graphs.11_February_2004)), namely: 1) Bar chart; showing the difference between objects, most commonly used in pareto analysis. 2) Comparison Bar Chart; contrasting information and showing potential correlations in data. 3) Table Chart; show data values or to capture data that is difficult to depict graphically. 4) Paired Bar Chart; comparing related object on more than one dimension. 5)

Multi Bar Chart; demonstrate relationship in a clean, easy to read style. 6) 100 Percent Column Chart; focuses analysis on percentage make-up of different items. 7) Waterfall Chart; showing the component breakdown or make up of a whole. 8) Pie Chart; show the percentage make-up or breakdown of a whole into its pieces. 9) Stacked Column Chart; show both relative percentage make-up and the absolute value difference. 10) Line Graph; showing any type of time series analysis. It is useful for frequency distributions where there are many categories of data. 11) Column Chart; showing single variable data. Use to present differences between objects or show change over time. 12) Mapping/ Geographical Information System (GIS); examining variables across geographic areas.

According to Bowen (2002:1), there are six objectives of using chart as a teaching media, namely: 1) Vary the pace of the lesson and accelerate the objectives of teaching learning process, 2) Allow the teacher to talk less, 3) Visualize abstract ideas of sound, motion, speed, size, distance, depth, and weight, 4) Make a communicative approach to language learning easier and more natural, 5) Help teacher to teach listening, speaking, reading, and writing, and allow teacher to integrate skills constructively, 6) Inspire imagination in both teacher and students.

People, of course do learn lots of things without asking questions. This shows that causation, like a coin or record, has two sides. The first, cause, probes the reason why actions, events, attitudes, and conditions occur. Effect, the second side, examines their consequences. Similarly, Arnaudett L. Martin and Barret E Mary (1984) defines that causality creates relationships between two actions, events, or happening with, however, an important addition element: the notion that one will, might, or, should lead to the other by causing it.

Mc Quade (1983:386) suggests four rhetorical patterns to organize a cause and effect essay, namely: 1) A single cause leading to a single effect, 2) A single cause leading to multiple effects, 3) Multiple causes leading to a single effect, and 4) Multiple causes leading to multiple effects.

One procedure to write such a cause and effect paragraphs involves displaying chart in which the action sequence is illustrated. By using chart, students will be able to narrate the categorical information. It also encourages students to use their creativity and power of observation to develop stories that can capture a reader's imagination.

Hypothesis is a tentative explanation for certain behaviour, phenomena, or events that have occurred or will occur (Gay; 1901:55). A hypothesis is needed to show the researcher's conceptual framework. Based on the theory of

conceptual framework, this research will try to prove the truth of this hypothesis: “There is a significant contribution of using chart to students’ achievement in writing cause and effect paragraphs”

Research Methods

The research of this study is a quasi experiment design. It was conducted to know the significant contribution of using chart in writing cause and effect paragraphs.

There are two groups in this research; control group and experimental group. Both experimental and control group were given pretest to see whether the students in both groups are relatively homogeneous in their abilities.

In experimental group, students were taught cause and effect paragraphs and the use of chart, and they were asked to write cause and effect paragraphs based on the data in the chart. While, students in control group were taught in a conventional way, that were taught descriptive writing without any treatment. In this case, the treatment is using chart. Then students were asked to write cause and effect paragraphs without using chart. The result of the test of control group was needed to compare whether the new treatment by using chart is more effective than the conventional one (without using chart) in this study.

Population is a set (or collection) at all element possessing one or more attributes of interest (Inderson; 1975:339). It refers to all the reseacher’s subjects. The population of this research was the third semester of Management students of Universitas Prima Indonesia on Jalan Sekip, Medan. The population consists of 148 students distributed in 6 parallel classes.

Arikunto (1998:120) says that if the subjects or population consists of large number, the sample can be taken between 10%-15% or 20%-25% of population as the sample. For efficiency and practicality of the research, two of the 6 classes of the third semester students JEELs were chosen randomly. So there were 56 students taken as a sample of this research.

The way for collecting data played an important role in conducting a research. The data were collected by using writing test. The time given is 45 minutes. The writing test consisted of more than one paragraph; more than 20 sentences.

There are five analytic scales for rating composition tasks (Brown and Bailey, 1984, pp. 39-41), namely: 1) Organization: Introduction, Body, Conclusion, 2) Logical development of ideas: Content, 3) Grammar, 4) Punctuation, Spelling, and Mechanics, 5) Style and Quality of Expression.

Validity is concerned with identifying the factors that produce the reliable variance in the test scores. Henning (1987:89) mentions that validity in general refers to the appropriateness of given test or any of its components parts as a measurement of what is supposed to measure. In defining validity as “the appropriateness, meaningfulness, and usefulness of the specific inferences made from test scores.” (American Psychological Association; 1985:9)

Reliability is the extent to which a test procedure produces similar results under constant conditions on all occasions. It refers to a measure of the degree to which a test gives the same results when it is given on different occasion or when it is used by different people (Richards; 1985:243). In other word, reliability is one of the test characteristics of a good test. Reliability refers to the consistency of the measurement. It means that if the test is repeated in different occasions and by different people, the outcome should not fluctuate too much. The test used in this study is in the form of essay test, so to find out whether the test is reliable or not, the score of the test can be computed by using Spearman Brown formula (Arikunto; 1999:173)

Formula

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

Where: r = the coefficient correlation

n = number of students

x = first score

y = second score

According to Pearson in Aruan (1983:132), the reliability of the test can be categorized as follows: 0.00 - 0.20 the reliability is very low; 0.21 - 0.40 the reliability is low; 0.41 - 0.60 the reliability is fair; 0.61 - 0.80 the reliability is high; 0.81 -1.00 the reliability is very high.

A calculation must be made to find out whether the use of chart is really useful to students' achievement in cause and effect paragraphs. The calculation is conducted by using t-test as shown below:

Formula

$$t = \frac{Ma - Mb}{\sqrt{\left[\frac{da^2 + db^2}{na + nb - 2} \right] \left[\frac{1}{na} + \frac{1}{nb} \right]}}$$

Where: Ma = mean of experimental group

Mb = mean of control group

da = deviation of experimental group
 db = deviation of control group
 na = number of students of experimental group
 nb = number of students of control group

Data Analysis, Discussion, Findings

Data Analysis

The data would be obtained by giving the tests to the samples. The writer presented the data of this research such as the initial names of the sample students and the score of the pretest and post test.

Without Chart			
No.	Initial Names	Score	
		Pretest	Post test
1.	ES	71	76
2.	LS	70	70
3.	AKR	66	68
4.	DIS	61	65
5.	RF	60	66
6.	JTS	53	53
7.	SPW	73	73
8.	AS	50	53
9.	ENS	64	67
10.	UT	73	74
11.	DNS	65	65
12.	RM	65	68
13.	DN	59	63
14.	MV	70	71
15.	AJM	64	68
16.	NN	67	73

17.	HVN	58	61
18.	MS	73	75
19.	DHS	63	63
20.	DSA	70	70
21.	ESM	52	58
22.	YS	61	63
23.	LPS	68	73
24.	TAS	53	55
25.	RAS	70	76
26.	EL	71	75
27.	S	60	64
28.	MRS	63	65

Using Chart			
No.	Initial Names	Score	
		Pretest	Post test
1.	DS	73	81
2.	KLT	61	70
3.	EO	60	70
4.	RS	72	86
5.	ARS	65	72
6.	IY	72	75
7.	RR	67	83
8.	ES	52	67
9.	MM	60	69
10.	A	63	72
11.	FS	69	84
12.	RW	70	80

13.	WF	53	73
14.	NY	74	83
15.	MH	64	74
16.	HE	64	74
17.	BH	61	73
18.	MO	58	62
19.	SU	61	80
20.	EM	52	78
21.	LS	71	90
22.	NR	58	72
23.	ETP	70	84
24.	SRM	66	73
25.	HAS	66	76
26.	SF	70	78
27.	DF	71	90
28.	SJ	63	83

In the data above, it can be observed that there is a significant difference between the students' score. We can see that the students who were writing cause and effect paragraphs by using chart (experimental group) got better results than they who were writing cause and effect paragraph in a conventional way (control group).

The reliability of the test of experimental group

No.	Pretest (x)	Post test (y)	x ²	y ²	xy	y-x
1.	73	81	5329	6561	5913	8
2.	61	70	3721	4900	4270	9
3.	60	70	3600	4900	4200	10

4.	72	86	5184	7396	6192	14
5.	65	72	4225	5184	4680	7
6.	72	75	5184	5625	5400	3
7.	67	83	4489	6889	5561	16
8.	52	67	2704	4489	3484	15
9.	60	69	3600	4761	4140	9
10.	63	72	3969	5184	4536	9
11.	69	84	4761	7056	5796	15
12.	70	80	4900	6400	5660	10
13.	53	73	2809	5329	3869	20
14.	74	83	5476	6889	6142	9
15.	64	74	4069	5476	4736	10
16.	64	74	4069	5476	4736	10
17.	61	73	3721	5329	4453	12
18.	58	62	3364	3844	3596	4
19.	61	80	3721	6400	4880	19
20.	52	78	2704	6084	4056	26
21.	71	90	5041	8100	6390	19
22.	58	72	3364	5184	4176	14
23.	70	84	4900	7056	5880	14
24.	66	73	4356	5329	4818	7
25.	66	76	4356	5779	5016	10
26.	70	78	4900	6064	5460	8
27.	71	90	5041	8100	6390	19
28.	63	83	3969	6889	5229	20
	$\Sigma x = 1806$	$\Sigma y = 2152$	$\Sigma x^2 =$ 117526	$\Sigma y^2 =$ 166670	$\Sigma xy =$ 139656	$\Sigma y-x =$ 346

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

$$r_{xy} = \frac{28(139656) - (1806)(2152)}{\sqrt{[28(117526) - (1806)^2][28(166670) - (2152)^2]}}$$

$$r_{xy} = \frac{3910368 - 3886512}{\sqrt{(3290728 - 3261636)(4666760 - 4631104)}}$$

$$r_{xy} = \frac{23856}{\sqrt{(29092)(35656)}}$$

$$r_{xy} = \frac{23856}{\sqrt{1037304352}}$$

$$r_{xy} = \frac{23856}{32207}$$

$$r_{xy} = 0.74$$

The reliability of the test of control group

No.	Pretest (x)	Post test (y)	x ²	y ²	xy	y-x
1.	71	76	5041	5776	5396	5
2.	70	70	4900	4900	4900	0
3.	66	68	4356	4624	4488	2
4.	61	65	3721	4225	3965	4
5.	60	66	3600	4356	3960	6
6.	53	53	2809	3025	2915	2
7.	73	73	5329	5329	5329	0
8.	50	53	2500	2809	2650	3
9.	64	67	4096	4489	4288	3
10.	73	74	5329	5476	5402	1
11.	65	65	4225	5225	4225	0
12.	65	68	4225	4626	4420	3
13.	59	63	3481	3969	3717	4
14.	70	71	4900	5041	4970	1

15.	64	68	4096	4624	4352	4
16.	67	73	4489	5329	4891	6
17.	58	61	3364	3721	3538	3
18.	73	75	5329	5625	5475	3
19.	63	63	3969	3969	3969	0
20.	70	70	4900	4900	4900	0
21.	52	58	2704	3364	3016	6
22.	61	63	3721	3969	3843	2
23.	68	73	4624	5329	4964	5
24.	53	55	2809	7025	2915	2
25.	70	76	5929	5776	5852	-1
26.	71	75	5041	5625	5325	-4
27.	60	64	3600	4096	3840	4
28.	63	65	3969	4225	4095	2
	$\Sigma x = 1800$	$\Sigma y = 1873$	$\Sigma x^2 = 117026$	$\Sigma y^2 = 131447$	$\Sigma xy = 121600$	$\Sigma y-x = 66$

$$r_{xy} = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

$$r_{xy} = \frac{28(121600) - (1800)(1873)}{\sqrt{[28(117026) - (1800)^2][28(131447) - (1873)^2]}}$$

$$r_{xy} = \frac{3404800 - 3371400}{\sqrt{(3276728 - 3240000)(3680516 - 3508129)}}$$

$$r_{xy} = \frac{33400}{\sqrt{(36728)(172387)}}$$

$$r_{xy} = \frac{33400}{\sqrt{6331429736}}$$

$$r_{xy} = \frac{33400}{79570.28}$$

$$r_{xy} = 0.42$$

The calculation and computation of the reliability in analyzing the test was applied by using the Pearson's formula. From the calculation, the reliability of the experimental group was 0.42, and the reliability of the control group's test was 0.74

The Experimental Group

No.	Pretest (x)	Post test (y)	(y-x)	da (y-x) - M	da ²
1.	73	81	8	-5.43	29.48
2.	61	70	9	-4.43	19.22
3.	60	70	10	-3.43	11.76
4.	72	86	14	0.57	0.32
5.	65	72	7	-6.43	41.34
6.	72	75	3	-10.43	108.78
7.	67	83	16	2.57	6.60
8.	52	67	15	1.57	2.46
9.	60	69	9	-4.43	19.22
10.	63	72	9	-4.43	19.22
11.	69	84	15	1.57	2.46
12.	70	80	10	-3.43	11.76
13.	53	73	20	6.57	43.16
14.	74	83	9	-4.43	19.22
15.	64	74	10	-3.43	11.76
16.	64	74	10	-3.43	11.76
17.	61	73	12	-1.43	2.04
18.	58	62	4	-9.43	88.92
19.	61	80	19	5.57	31.02
20.	52	78	26	12.57	158
21.	71	90	19	5.57	31.02
22.	58	72	14	0.57	0,32
23.	70	84	14	0.57	0.32

24.	66	73	7	-6.43	41.34
25.	66	76	10	-3.43	11.76
26.	70	78	8	-5.43	29.48
27.	71	90	19	5.57	31.02
28.	63	83	20	6.57	43.16
	$\Sigma x = 1806$	$\Sigma y = 2152$	$\frac{\Sigma(y-x)=346}{Ma = 346/28 = 13.43}$	$\Sigma da = -30.04$	$\Sigma da^2 = 826.92$

The Control Group

No.	Pretest (x)	Post test (y)	(y-x)	db (y-x) - M	db ²
1.	71	76	5	2.64	6.97
2.	70	70	0	-2.36	5.57
3.	66	68	2	-0.36	0.13
4.	61	65	4	1.64	2.69
5.	60	66	6	3.64	13.25
6.	53	53	2	-0.36	0.13
7.	73	73	0	-2.36	5.57
8.	50	53	3	0.64	0.41
9.	64	67	3	0.64	0.41
10.	73	74	1	-1.36	1.85
11.	65	65	0	-2.36	5.57
12.	65	68	3	0.64	0.41
13.	59	63	4	1.64	2.69
14.	70	71	1	-1.36	1.85
15.	64	68	4	1.64	2.69
16.	67	73	6	3.64	13.25
17.	58	61	3	0.64	0.41

18.	73	75	3	0.64	0.41
19.	63	63	0	-2.36	5.57
20.	70	70	0	-2.36	5.57
21.	52	58	6	3.64	13.25
22.	61	63	2	-0.36	0.13
23.	68	73	5	2.64	6.97
24.	53	55	2	-0.36	0.13
25.	70	76	-1	-3.36	11.29
26.	71	75	-4	-6.36	40.45
27.	60	64	4	1.64	2.69
28.	63	65	2	-0.36	0.13
	$\Sigma x = 1800$	$\Sigma y = 1873$	$\Sigma(y-x) = 66$ $Ma = 66/28$ $= 2.36$	$\Sigma ba = -0.72$	$\Sigma db^2 =$ 150.44826.92

Ma = 13.43
 Mb = 2.36
 na = 28
 nb = 28
 da² = 826.92
 db² = 150.44

$$t = \frac{Ma - Mb}{\sqrt{\left[\frac{da^2 + db^2}{na + nb - 2} \right] \left[\frac{1}{na} + \frac{1}{nb} \right]}}$$
$$t = \frac{13.43 - 2.36}{\sqrt{\left[\frac{826.92 + 150.44}{28 + 28 - 2} \right] \left[\frac{1}{28} + \frac{1}{28} \right]}}$$
$$t = \frac{11.07}{\sqrt{\left(\frac{977.36}{54} \right) \left(\frac{2}{28} \right)}}$$
$$t = \frac{11.07}{\sqrt{(18.1)(0.07)}}$$
$$t = \frac{11.07}{\sqrt{1.267}}$$
$$t = \frac{11.07}{1.12}$$
$$t = 9.8$$

The result of t- calculation showed that t-observe is 9.8 and the t-observe is bigger than t-table ($9.8 > 1.671$: $p = 0.05$). It means that using chart significantly contributes the the students' achievement in writing cause and effect paragraphs.

Conclusion

After analyzing the data, conclusion is drawn as the following: The relationship between the use of chart to students' achievement in writing cause and effect paragraphs to the third semester of Management department at Universitas Prima Indonesia, Medan was positive and significant.

After seeing the conclusion above, the writer would like to offer some suggestions to the English teachers, as follows: 1) The English teacher should guide their students to use chart as a useful technique to achieve writing cause and effect paragraphs, 2) It should realized that writing achievement is a fundamental thing to improve the four language skills.

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