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THE IMPLEMENTATION OF ANALOGICAL REASONING IN LEARNING PARTS OF SPEECH AND ITS EFFECT TO THE COMPREHENSION AND PRODUCTION OF SIMPLE SENTENCES

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ABSTRAK

Penalaran analogis begitu penting dalam proses berpikir manusia. Dalam rangka memahami sesuatu yang tidak diketahui atau ditemui untuk pertama kalinya, orang akan membuat kesimpulan dengan membandingkannya dengan apa yang telah dikenal oleh kognisinya. Analogi selalu digunakan dalam proses berpikir, bahkan bidang persoalan yang jauh dapat digunakan untuk membantu memahami konsep atau situasi tertentu yang baru. Dalam proses pembelajaran penalaran an<mark>alogis ini mungkin berlaku juga karena i</mark>nti dari penalaran analogis meniscayakan proses pemeriksaan yang tidak diketahui dengan memanfaatkan sesuatu yang telah dikenal dalam satu hal atau hal lainnya. Strategi ini kemudian diterapkan dalam pembelajaran parts of speech (kelas kata) untuk kelas Interaktif Grammar I. Penelitian ini dilakukan untuk menemukan jawaban atas efektivitas penalaran analogis sebagai strategi pembelajaran parts of speech dan hubungannya dengan kemampuan mahasiswa memahami parts of speech dan menggunakan parts of speech tersebut dalam membuat kalimat sederhana. Mengacu pada perhitungan statistik, tidak ada perbedaan yang signifikan pada pemahaman dan kemampuan membuat kalimat sebelum dan sesudah pelaksanaan strategi dan hanya ada sedikit korelasi antara pemahaman dan kemampuan membuat kalimat tersebut setelah perlakuan. Jadi, mahasiswa yang skor pemahamannya rendah tidak berarti bahwa mereka mendapat skor yang rendah pula pada kemampuan membuat kalimatnya. Selain itu, pemah<mark>aman hanya mem</mark>iliki sed<mark>ikit pen</mark>garuh pada ke<mark>mampu</mark>an memb<mark>uat kalimat (20,7</mark> %).

Kata kunci: analogi, penalaran, pemahaman, kemampuan membuat kalimat, parts of speech

1. INTRODUCTION

Human brains work by patterns and association. If a perception fits roughly into an existing pattern, then the existing pattern may be taken as definitive. For example, if a half-hidden person is seen, then he or she will be recognized as someone familiar or known. Similarity is always used in the thinking, where even distant fields may be used to help understand a given concept or situation. Although this can lead to fallacious associations, it can also be very helpful in extending understanding. Similarity used in the way of thinking is also known as analogical thinking or reasoning.

Analogical reasoning is primarily essential to human thought. In order to comprehend something unknown or encountered for the first time, one would make an inference by comparing it to what has already been known by his/her cognition. The term analogy itself, according to Digital English Oxford Dictionary, means as a comparison between one thing and another made for the purpose of explanation or clarification, that is the process of making such a comparison from one thing as being analogous to another. In referring to http://plato.stanford.edu/entries/reasoning-analogy/, analogy is widely recognized as playing an important *heuristic* role, as an aid to discovery and having been employed, in a wide variety of settings and with considerable success, to generate insight and to formulate possible solutions to problems. In the process of learning this analogy reasoning or thinking may be applicable too since the very core of analogy reasoning entails the process of examination of the unknown in light of the known in this and other ways. What human consciousness brought to this process is deliberate and complex analysis, comparing an unknown phenomenon to a prior similar experience, and inferring or predicting more complex qualities of the unknown. That intricate analysis which is in the domain of cognitive science, will not be discussed in this respect. Analogical reasoning is viewed and utilized merely in the sense of being a strategy of learning. This strategy, I believe, can be used to teach parts of speech in an interactive grammar class.

Parts of speech are the basic parts of grammar. Learners of English would find it difficult to construct spoken and written communication if the knowledge of this aspect is absent or ignored. Knowing parts of speech will help the learners eliminate grammatical problems primarily in writing compositions or essays. There are only eight parts of speech, i.e. nouns, adjectives, verbs, adverbs, pronouns, prepositions, conjunctions, and interjections. Interjections (Alas!, Hurrah!, Damn!) are rarely used in academic writing. Therefore, the last part will not be taken into account. Besides, Celce-Murcia et.al. (1999) does not include the interjection. Instead, she considers determiners because the term determiner refers to special class of words that limit the nouns that follow them but that have no derivative and inflective forms, such as the, a, this, those, my, etc. The remaining seven parts plus determiners are recognized and acknowledged as what they are only when they are used and arranged in the context of sentences. In that case, the learners are also required to comprehend basic clause patterns or/and sentence elements defined by Quirk et.al. (1985) in A Comprehensive Grammar of the English Language. So, the learning of parts of speech has two folds, the parts of speech themselves and the sentence structures. The objectives of this learning are to enable the learners to comprehend the "what and how" of the usage of parts of speech and to produce their own sentences grammatically. But this job is not easy since English is learned as a foreign language. Limited vocabulary and knowledge of grammar will definitely hinder the learners from constructing correct sentences. Since Ringbom (http://www.jyu.fi/hum/laitokset/solki/afinla/julkaisut/arkisto/48/ringbom) says that in foreign language learning all learning of new knowledge and skills relates to previous knowledge and skills, it seems that his remark is in compliance with the concept of analogy reasoning. To attain the objective of optimality in the learning of parts of speech, then I considered it important to apply the method.

Learning parts of speech by utilizing the strategy of analogy reasoning may also contribute to enabling the learners to comprehend and produce grammatical sentences, and these competencies can be implemented especially when they have to write essays. Writing essays or composition, to be sure, needs certain strategies and methods, but whatever the strategy or method being used is, it will be useless if the learners cannot arrange or construct English at the level of sentences. Knowing the function of each part of speech and each position with other words in a sentence, will prevent them from stumbling on some grammatical problems.

The problem of this research arises from whether analogical reasoning as the strategy of learning parts of speech has some of advantages to the learners and has the effect to improve their comprehensions on the usage of parts of speech, then to their productions of English sentences.

2. RESULT AND DISCUSSION

Comprehension

The test on comprehension covered the ability to discriminate 8 parts of speech in simple sentences, i.e.: nouns, verbs, adjectives, adverbs, pronouns, prepositions, conjunctions, and determiners. Firstly, the students were required to identify the word underlined in a sentence by naming each word whether as a noun, a verb, an adjective, or an adverb, and so on. Secondly, they had to classify the words in each sentence based on the intended member of parts of speech. For example:

- 1. Based on Parts of Speech, what category is the word underlined in each sentence below? *Ali and Timo actually cleaned their large apartment.*
- 2. Underline the word(s) based on the intended category of Parts of Speech.

In reference to Prof. Dr. Sugiyono (2009), the validity test on the items of instrument in a variable can be done by finding the index of discrimination value. The index of discrimination is the difference between the proportion of the upper group who got the item right and the proportion of the lower group who got the item right. The high and low achieving students are defined as the upper and lower 27 % of the students based on the total examination score.

There were two instruments for obtaining the data of the students' comprehension on parts of speech, i.e., before and after the implementation of analogical reasoning strategy. Through the calculation of standard deviation and t-test, the results of validity on both comprehension tests are presented as the following:

Upper group	Lower group			
$\overline{X}_1 = 64.8; \ \sum X_1^2 = 108.8; \ SD = 5.21$	$\overline{X}_2 = 28.8; \ \sum X_2^2 = 268.8; \ SD = 8.19$			

Table 1. 27% of upper and lower scores on comprehension using classical strategy of teaching

$$t = X_1 - X_2$$
 $t = 64.8 - 28.8$ $t = 8.33$; $df = 8$; $t \text{ table} = 1.86$
 $SD \sqrt{1/n_1 + 1/n_2}$ $6.86\sqrt{0.4}$

The result above shows that the test instrument on comprehension based on classical strategy is valid because the t score (8.33) > t table (1.86)

Upper group	Lower group
$\overline{X}_1 = 72.8; \ \sum X_1^2 = 80.8; \ SD = 4.49$	$\overline{X}_2 = 28.4$; $\sum X_2^2 = 485.2$; SD= 11.01

In a similar way as above, the score obtained through t-test in table 7 is 8.36, larger than the value of t table, which is 1.86. This means that the items in the comprehension test on parts of speech by using analogical reasoning strategy are valid.

Production

The test on production competence of parts of speech was presented in an open, free sentence writing. The students were asked to write a sentence that contains eight different categories of parts of speech and to underline the words that show those categories. Here, they were not only to prove their understanding on each parts of speech, but also to show their ability to compose correct sentences, to use the parts of speech in the context.

The results of the tests on production which were also conducted twice, include the sentences the students made before and after the treatment. The scores given are based on the identification of parts of speech not the correctness of the sentences. The summary can be seen in the table below:

No	Index No.	Score 1	Sentence	Score 2	Sentence		
1	12130020	25	Radit and friend study hard	100	Yesterday, me and family go to		
		Y	to prepared examine for last		the market and I buy some		
	,		week.		water cold.		
2	13130001	62.5	Mother bought a big cake	87.5	She drived her car cool and		
			and then gave it to her		rarely on the road last night.		
			children at living room.				
3	13130005	100	He punched the young thief	100	The tiger in the zoo was really		
			bravely in the street and took		thin because the government		
			him to the police.		did not care about it.		
4	13130010	50	My mother cooked that	100	Deni always give some		
			<u>chicken usually with her pan.</u>		beautiful flowers to his		
					girlfriend if he has a mistake.		
5	131 <mark>30011</mark>	0	A big boy was played	75	The passengers on the bus are		
			football in the park with his		sleeping beautifully when the		
		1-1	friends and their looks really		old bus driver drinks coffee.		
			happy				
6	131 <mark>30012</mark>	30012 12.5 A <u>little puppy played around</u>		25	In the <i>middle</i> of earth there is		
		in the field.	1	deep and dark.			
7	13130013 50		Me and my friend have some	75	Priska has many problems with		
			homework and do it together		her boyfriend, but she didn't		
			when my other friend have		talk with her friends about her		
			being <i>crazy</i> .		boyfriend because she afraid.		
8	13130014	100	Cindy and her family spend	100	Cindy and her best friends		
			their holiday in Paris last		went to Bali last year and she		
			year and she gave me a		gave me a cute dress.		
			miniature of Eiffel and it was				
	truly beautiful.		87.5				
9	13130015	87.5			Yesterday, Ratna went to the		
			and little parrot in the pet		pet shop and buy a little cat.		
			shop, <u>it</u> so <u>friendly</u> .				
10	13130016	0	Last month, my mother went	87.5	Last year, my father bought me		
			to Singapore and bought me		a red car and iphone as my		
			some bags and clothes.		birthday's present.		

11	13130018	100	We bring a doll for her and		Yesterday, my uncle brought a		
			yesterday she is happy. Dhita will hit me <i>if</i> I make		<u>doll for me and</u> I feel <u>happy</u> .		
12	12 13130019 50		<u>Dhita</u> will <u>hit me</u> <i>if</i> I make		Luhan and Sehun reading for		
			her the laugh.		exam next week but they do		
					not <i>understand</i> of the <i>exercise</i> .		
13	13130020	100	My father bought a cute cat	100	My mother buy a new bag for		
			for me and I very like it.		me because I get a very good		
					score.		
14	13130021	0	Rina very fast their reading	50	When <u>lightning struck</u> the <u>old</u>		
			book yesterday.		barn it burned quickly.		
15	13130022	37.5	My mother sold her computer	37.5	Bibob and his friend went to a		
			to a friend.		meeting.		
16	13130023 75 <u>Bibob bo</u>		Bibob bought me a cute cat	87.5	Lusi and Talitha learned about		
			and a cool toy for his little		the young elephant but they		
			brother.	2.0	did not catch it.		
17	17 13130024 100 Tina and Tino go to the		100	A beautiful girl will visit Bali			
			market and they buy a red		next holiday and she will buy		
			shoes today.	1	<u>handcraft</u> in there.		
18	1313 <mark>0025</mark>	0	Every Sunday, I always wake	100	She is very angry to her mother		
			up early and doing some	1	because she bought the wrong		
		Y \	exercise like jogging or		book.		
			playing football.		101		
19	13130029	0	I like playing guitar because	0	Arga has been practicing guitar		
			my brother is a guitar player		with his best friend recently		
			and his always teach me how		but yesterday he did not		
			to play the guitar correctly.		practicing because his friend		
			(1.70)		very busy.		

Table 1. The result of production tests before (score 1) and after (score 2) the implementation of the analogical reasoning strategy in teaching parts of speech.

Note: The underlined words were correctly identified, the words in the italics were wrongly identified, and the unmarked words were not identified.

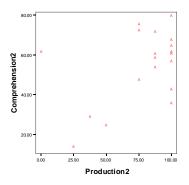
At the beginning of the study, it was assumed that there may have been a significant difference between a classical and an analogical reasoning strategies in learning, but it is proved that there are no differences in both comprehension and production before and after the implementation of the strategy. The alternative hypothesis that there are differences between comprehension1 (classical) and comprehension2 (analogical reasoning) is rejected because t observed is lower than t table, or -2.148 < 1.734. Similarly, the alternative hypothesis for the difference between production1 (classical) and production2 (analogical reasoning) is also rejected because t observed -3.620 < t table 1.734. Those indifferences are quite significant because the probability (sig) 0.046 < 0.05 for comprehension, and 0.002 < 0.05 for production.

Correlation of Comprehension and Production

In theory, there is a relation between comprehension and production even though a gap always exists between the two (www.let.rug.nl/~hoeks/topicshift09.pdf). People comprehends a lot better than they can actually express or produce. In my previous study on comprehension and production (K. Idawati and Widiastuti, 2013), the relationship between the two were significantly strong (0.671, sig. 0.000). The following investigation, on the contrary, results in value 0.454, which means that the Pearson correlation between comprehension and production is merely moderate, at significance value 0.051>0.05. Based on the criterion (Sarwono, 2006), if the probability is higher than 0.05, the correlation is not significant. But this insignificance should be tested with a scatterplot graph with the reason that when there are only a few participants computed, moderate correlations may misleadingly not reach significance and at the opposite, when there are large samples, small correlations may misleadingly turn out to be significant. Since the sample in this study is small (19 subjects), it is necessary to use the scatterplot graph to see the significance of the relationship between the variables. If a diagonal line is stretched up from the lower left to the right, the correlation between comprehension and production indicated by dots which are quite close to the diagonal line, can be regarded as significant enough.

		Compre hension 2	Production2
Comprehensio n2	Pearson Correlation	1	.454
	Sig. (2-tailed)		.051
	N	19	19
Production2	Pearson Correlation	.454	1
	Sig. (2-tailed)	.051	
	N	19	19

Production2



Picture 1. Scatterplot Graph

So, with only the difference 0.001 out of significance standard value 0.05, it does not mean that the correlation is not significant because there is still a moderate correlation between the two variables. The moderate correlation may indicate the existence of intervening variables that influence the correlation.

Мо-		R	Adjusted	Std. Error of		Chan	ge Stati	stics	
del	R	Square	R Square		Sig. F	F Change	df1	df2	Sig. F Change
1	.454(a)	.207	.160	26.96266	.207	4.425	1	17	.051

a Predictors: (Constant), Comprehension2

b Dependent Variable: Production2

Table 3. Model Summary

Compared to F_{crit} whose value is 4.451 at df 1 and df 17, the F (4.425) as shown in both tables above indicates that the relationship between the two variables is not linear because F (4.425) $< F_{crit}$ (4.451). It means that the scores in production is not necessarily influenced by comprehension. In other words, the comprehension is not an influential predictor to the production. Its determination coefficient is only 20.7%, meaning that the comprehension only influences the production as far as 20.7%. The rest percentage (79.3%) is the factors beyond the existing variable that influence the students' production of parts of speech.

It seems that the study on the effectiveness of analogical reasoning strategy used in the teaching and learning parts of speech for the students at the first semester of their study in the subject of Grammar has resulted in the unwanted facts. The first fact is that even though the instruments

constructed for the comprehension ability on the parts of speech before and after the treatment were valid, there is no difference between the comprehensions before and after the treatment (-2.148 < 1.734). It means that the analogical reasoning strategy has no effect in improving students' comprehension scores. There are some reasons to be put forward here. There was only one class available consisting only 22 students and consequently, it was impossible to divide the class into two groups to be treated by the study. So, there was no different control group and experiment group. Both sample groups were divided only by different times of treatments. Thus, the scores obtained for the classical and the intended strategies of teaching came from the similar respondents. As a result, there must have been a bias on the result of the second test by the respondents. The respondents were likely twisting the two modes of learning, between the classical and the intended strategy, or they may have had no clear cut whether to use the previous knowledge or the recent one. They retrieved their knowledge on the parts of speech the way they mostly could handle, not specifically by using analogical reasoning. In addition, the limited span of time allocated in conducting the experiment hindered the investigation from obtaining the optimum condition to get the appropriate objectives. A tight syllabus schedule on the subject of Grammar was plausible to limit the span, otherwise the students would not get enough learning material covered in the syllabus. It took six sessions for the experiment alone out of twelve sessions available in one semester in the academic year 2013/2014.

The mean score of comprehension1 (classical) is 46.73 compared to that of 54.00 of comprehension2 (analogical reasoning). It is only different at 7.27 points with 14.73 of standard deviation (SD), which means that there is a wide gap in the ability of comprehending the material among the students. The gap is even wider in comprehension2 with SD 18.18. This gives a description that the learning strategy has not efficiently and effectively been applied and tested due to the circumstances explained above.

The scores attained in comprehension2 seems not to have a strong relationship with the students' production scores. Based on the results presented above, it has been proved that the relationship between comprehension and production on the case of learning the parts of speech by using analogical reasoning turns out to be only moderate with very little significance. Ideally, the significance value should be 0.000 < 0.050; the fact is 0.051, with the difference of 0.001. This problem arises due to the small samples involved in the study. The problem is also recognized by the fact that both of the variables are not linear, which means that the lower or

the higher the scores are on comprehension, have nothing to do with or very little relationship to the lower or the higher scores the students get on production. The scatterplot graph shows more like a curve to indicate that there are variations both on comprehension and production abilities. For example, the same student can do well in production but poorly in comprehension. Likewise, another student is good at comprehension but not good enough at production, while others have balanced abilities. The result of statistical calculation F (4.425) $< F_{crit}$ (4.451) supports this fact. That is why the influence of comprehension2 on production2 is only 20.7%. The remaining 79.3% is the influential factors beyond the comprehension variable.

There may be some analysis that can be derived from the students' work, especially on their production, as described in the following:

a) Previous Rote Learning Experience

Most of the students (respondents) were able to build sentences from the simple up to the complex ones with just few errors, at least semantically but the sentences they produced are quite similar in structures to those of what they previously constructed. In other words, the sentences the respondents produced in production1 are not so much different to production2. This indicates that rote learning is dominant among the students. Rote learning is a memorization technique based on repetition. For example:

Cindy and her family spend their holiday	Cindy and her best friends went to Bali
in Paris last year and she gave me a	last year and she gave me a cute dress.
miniature of Eiffel and it was truly	FRSI
beautiful.	EI
My mother buy a little cat and little parrot	Yesterday, Ratna went to the pet shop
in the pet shop, it so friendly.	and buy a little cat.
We bring a doll for her and yesterday she	Yesterday, my uncle brought a doll for
is happy.	me and I feel happy.
My father bought a cute cat for me and I	My mother buy a new bag for me
very like it.	because I get a very good score.

I like playing guitar because my brother is
a guitar player and his always teach me
how to play the guitar correctly.

Arga has been practicing guitar with his
best friend recently but yesterday he did
not practicing because hi deep s friend
very busy.

Rote learning is fine for the mastery of basic knowledge, such as pronouncing English phonemes or words, forms of tenses, etc. but when learning emphasizes the importance of deep understanding over the mere recall of facts, rote learning is not suggested. Unfortunately, the students, because of their past high-school-learning experience, still used that style in learning new knowledge at college whose tasks require problem-solving method. The students wrote the sentences such as those above because they had done them over and over again, so that way became automatic without their knowing the kinds of words (the parts of speech) they used in constructing their sentences. To some extent, no wonder, they failed to recognize the parts of speech of the words in their sentences. They could produce the sentences not because they understood the functions of the words such as nouns, verbs, adjectives, or adverbs. They wrote their sentences just because they used to writing those kinds of sentences, chiefly with the verbs bring, buy, give, and go.

When they were asked to write sentences then identify each words in their sentences based on their understanding on the parts of speech and the unique position of each word in relation to other words (immediate constituents), they seemed not to comprehend. The word 'to' in 'go to the market' was labeled as a conjunction, 'exercise' in 'of the exercise' as a verb, and 'meeting' in 'went to a meeting' as also a verb. So, it is also reasonable to suspect that they only counted on memorization and prediction (guessing) when they did the comprehension test. That is why their comprehension was weakly correlated to their production on the issue of the parts of speech.

b) Lacks of Knowledge on Sentence Structures

Other errors mostly concern with tenses and word choice and arrangement (syntax), for example:

- 1. Luhan and Sehun reading for exam but they do not understand of the exercise.
- 2. *In the middle of earth there is deep and dark.*
- 3. She drived her car cool and rarely on the road last night.

4. Yesterday, Ratna went to the pet shop and buy a little cat.

It is quite clear that the students were not cautious with their grammar or they may not have had enough knowledge on grammar, or lacked of exercises from their previous education.

c) Interference of L1 on L2

The influence of first language on the students' English (L2) is an obvious fact, as seen in the examples below:

- 1. Yesterday, me and family go to the market and I buy some water cold.
- 2. In the middle of earth there is deep and dark.
- 3. She drived her car cool and rarely on the road last night.
- 4. Me and my friend have some homework and do it together when my other friend have being crazy.

Here, the students tend to rely on their native language (L1) structures to produce their L2 sentences. If the structures of the two languages are different, then some errors are likely to occur. This is what is called as interference of L1 on L2. In a production process, interference, or transfer as Kohn (www.mikeswan.co.uk/elt-applied-linguistics/influence-second-language.htm) names it, is involved in a student's retrieval of inter language knowledge and his effort to bridge linguistically the gaps in his knowledge which cannot be side stepped by avoidance.

So, the comprehension on the parts of speech alone cannot be justified as directly having the influence on the production because including the 3 factors mentioned above, there may be other factors (79.3%) that involve in the production process. It is considered necessary then to explore other variables involved in students' production competence. For that concern, it would be possible to investigate another study on the issue of production competence.

3. CONCLUSION

Based on the result of the research, the mean difference on comprehension before and after the implementation of analogical reasoning strategy of learning the parts of speech among the semester 1-students was only 7.26 points/percent. After the treatment, the students' average comprehension competence on the parts of speech was 54% compared to 46.73% before the

treatment. The average production competence after the treatment was 78.28% compared to 50% before the treatment. In referring to the statistical calculation, there were no differences in both comprehension and production before and after the implementation of the strategy because t-observed is lower than t-table (-2.148 < 1.734) on comprehension, and -3.620 < 1.734 on production. The facts above were considered quite significant (0.046 < 0.05 for comprehension, and 0.002 < 0.05 for production).

There was only little correlation between comprehension and production after the treatment (0.454) because the significance value was larger than the criterion (0.051 > 0.05). It was considered that the comprehension and the production variables were not linear. So, the students whose comprehension scores were lower did not mean that they got lower scores as well on production. In addition, comprehension had very little influence on production (20.7%).

In conclusion, the analogical reasoning as the strategy of learning parts of speech has been proved as not effective in this study for several reasons: 1) there was not enough time to apply the strategy in class; 2) the strategy was not appropriately tested due to the small population and samples; 3) consequently, there was a bias (analogical reasoning was not solely used by the students to do the test) to occur on the score differences; and 4) the comprehension competence on the parts of speech cannot be used to measure the production competence in a form of sentence building because there are factors influencing the process of the production itself, such as the knowledge previously acquired from past learning experience and the interference of native language (L1) on the target language (L2).

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