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TEACHING VOCABULARY THROUGH A SEMANTIC MAPPING TECHNIQUE

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Abstract

This study compared teaching vocabulary through a definition and explanation technique with a semantic mapping technique, specifically to see which of the two techniques was more effective in achieving accurate and appropriate use of selected vocabulary and generating an awareness that words are related in meaning. A group of 40 Form 1 students were randomly selected. These were taught using a definition and explanation technique and later pre - tested. They were then taught through a semantic mapping technique, and were post - tested. The results showed a significant improvement in the performance of the students in respect to accurate and appropriate use of words as well as understanding meaning relations among words after being taught through a semantic mapping technique than after being taught with a definition and explanation technique

Introduction

The need for this research had been shown by the apparent limited vocabulary, superficial understanding of meanings of words, and lack of knowledge of the relatedness among words shown by most 'O' level graduates who enrol in Teachers' Colleges in Zimbabwe. The researcher had observed that most vocabulary lessons in most Zimbabwean schools are characterised by definition and explanation techniques. Such techniques have been shown to provide sufficient word meaning only if the learners already, in part, understand the concept or if the concept is easy to understand. It would seem that a definition may provide a good start in learning the meaning of a word if the definition accurately explains the meanings as well as taking into account the level of understanding of the learners.

It has also been observed that individuals tend to remember words in terms of the semantic fields in which they are semantically mapped. Furthermore, research on human memory (Abudullah, 1993) has revealed that human beings capture their experiences of the world in scripts or schemata of related events

and this has led to the further surmise that words too are stored in semantically related networks. This, therefore, would suggest that in order for vocabulary teaching to be effective, vocabulary should be presented in semantic fields, or maps, or networks.

It was upon this background that the researcher sought to test the relative effectiveness of a definition and explanation technique; and a semantic mapping technique.

Research Questions

1. Does accurate use of words increase if learners are taught through a definition and explanation technique or through semantic mapping technique?
2. Does appropriate use of words improve if learners are taught through a definition and explanation technique or through a semantic mapping technique?
3. Does the semantic mapping technique improve learners' awareness of the relatedness of words more than a definition and explanation technique?

Hypothesis

The research hypothesis guiding this research was that the use of a semantic mapping technique tends to increase students' awareness that words belong to semantic fields and, therefore, increases their facility to use words accurately and appropriately. A definition and explanation technique on the other hand does not effect this to the same degree.

Significance of the Study

The findings of this study should help influence teachers in secondary schools and lecturers in teachers' colleges to select teaching techniques which increase students' facility with words when listening, speaking, reading and writing English.

Limitations

English is a second language to most people in Zimbabwe, therefore, subjects in this research could have come across the target vocabulary in a variety of

ways. Because of that, it was necessary to carry out a pilot study in an attempt to establish the extent to which the target vocabulary was already a part of the linguistic repertoire of the respondents.

Literature Review

Allen (1983) observed that teachers spend too much time explaining new words and further stated that learning words and their meanings was not enough. This view was shared by Harris and Sipay (1990) when they observed that vocabulary instruction today largely involves some combinations of the teacher mentioning a word's meaning in a single sentence, explanation or providing a brief definition or synonym; the pupils looking up word meanings, writing and memorising definitions. They further asserted that if the concept is already partially known or is easy to understand, explanations, definitions, or synonyms may provide sufficient word meaning and that if the definition is accurate and simple enough to understand, it may provide a good start in learning meanings of words.

On the other hand, Beds and Cockrum (1985) maintained that a method which helps learners to fit new words into an already existing conceptual network is substantially more effective than one which fails to do so. Johnson *et al* (1986) concurred when they observed that a semantic mapping technique, a categorical structuring of information in a graphic form, is a more effective method of vocabulary instruction. They further stated that this technique required students to relate new words to their own experiences and prior knowledge, hence, having the advantages that it enables teachers to get information about what the students know which reveals anchor points on which new concepts can be introduced.

Johnsore *et al* (1986) suggested the following model for sequencing activities in semantic mapping:

1. choosing a word central to the topic the class is studying;
2. writing the word on the chalk board;
3. thinking out words related to the selected key word and listing these words by categories on the chalkboard;
4. students working individually for several minutes to think of as many words as possible that are related to the key word, and listing these words by categories on a piece of paper;

5. students sharing their prepared lists orally and adding their words to the class map in categories; and
6. discussing the entries on the semantic map and encouraging students to become aware of the new words, gathering meanings from old words and finding relationships among new and old words.

Duin and Graves (1988) in support of this technique, went on to say that in order for vocabulary instruction to affect comprehension, it must do more than establishing accurate responses to words; it must extend to elaborated meanings of words, relate these to students' prior knowledge and experiences and build relationships among words. Smith (1990) expressed the same view differently when he observed that if students are asked to reveal any vocabulary they already have, these words may help them to associate meanings with new words. In this way, definitions and their particular meanings within a given sentence have a context and a set of relations to build on.

Abdullah (1993) also argued that words are stored as concepts in scripts that contain semantic networks of related words and individuals recall words according to the semantic fields in which the words are conceptually mapped. Abudullah (ibid) concludes that effective vocabulary instruction should help students to organise information or words according to concepts or topics. Beck and Mckeon (1993) seem to share the same view. They observed that to achieve true vocabulary development and not mere rote learning, instruction should be rich and multifaceted, taking into account the type and extent of encounters needed for a word to be used fluently and flexibly and become a permanent part of a child's vocabulary.

Harris and Sipay (1990) had observed that vocabulary instruction has been found to be effective when it provides definitional and contextual information that is, knowledge about relationships between the target words and words whose meanings are already known. Earlier Scheifer (1985) had also argued that word lists and memorisation are futile to vocabulary instruction but inferring meaning from context is more effective. Richeck (1985) had also argued that students must become alert to words in their environment if they are to become good vocabulary learners.

Harris and Sipay (1990) maintained that different instructional methods are appropriate under different circumstances. They argued that intensive long-

term instruction is needed to develop the mastery of word meanings and the development of rich concept networks while brief instruction can get students started on the road to mastery.

The preceding research has in common the view that a definition and explanation technique is inadequate as a vocabulary instructional method as it fails to deliberately link students' prior knowledge to the target words. The researchers concur that a method which helps learners to relate meanings of words already known with new meanings is more effective. It should however, be observed that apart from Johnson *et al* (1986), none of them has proposed a workable model to effect this: Johnson *et al*'s model for semantic mapping, if used as it is, would present problems of implementation as it does not clearly outline the steps to follow in a systematic way. The present researcher, therefore, even though using Johnson *et al*'s (1986) ideas, modified the model to make it easy to use.

In addition, it should be observed that no similar research on vocabulary instruction, using a semantic mapping technique had yet been conducted in the Zimbabwean context. It is in this respect that this research should be viewed because what may have been found to obtain in other second language situations may actually not be the case in the Zimbabwean linguistic situation.

Methodology

Sample

The sample comprised forty students randomly selected from a population of 120 Form One students. The forty students were randomly sampled through a card system. Cards with the number 1 and cards with the number 2 were put in a box. Students who picked cards with the number 1 formed the sample.

Materials and Data Collection Procedures

The forty students were pre- tested after being taught through a definition and explanation technique around the topic "ACCIDENT". The following were target words for the learning activity 1:

accelerate	Accident	acid	ambulance
argument	bleed	bonnet	brake
bruise	bumper	casualty	caution

collision	confusion	control	cross
crush	damage	dazed	deliberate
dislocation	emergency	excitement	fracture
halt	Hazardous	haphazardly	hotter
impact	Indicator	injury	internal
intersection	intoxicator	intensive	judgement
metallic	misfortune	motorist	negligence
overtake	overturn	panic	pavement
pedestrian	pile-up	reckless	risk
scream	shock	statement	steering-wheel
stretcher	swell	swerve	traffic
traffic-jam	unconscious	vehicle	vision
windscreen	wreckage		

These words were selected as being central to 'vehicle' accidents that the students were familiar with.

Learners were encouraged to use the Little Oxford Dictionaries available in the class and discussions of dictionary entries were also encouraged among pupils. Two double lessons amounting to 160 minutes were conducted by the researcher. Lessons were recorded on tape by the class teacher and the researcher made a transcript of the lessons. One month after the pre-test the experiment group was taught vocabulary around the topic "ACCIDENT" by the researcher using a semantic mapping technique. Johnson *et al*'s semantic mapping technique model was adapted.

Modifications

1. Choosing a word central to the topic that the class is studying;
2. Writing the word on the chalkboard;
3. Students thinking out and writing down, individually, words related to the selected key word and listing these words by categories;
4. Pupils in, pairs, comparing and discussing lists and categories and coming up with a categorised list;
5. Pair teaming up with another pair to compare and discuss categorized lists and coming up with a joint categorised list;

6. One group putting up its categorised list on the chalkboard with the key word in the centre;
7. Students sharing their prepared lists orally and adding their words to the map on the board, in categories;
8. Discussing the entries on the semantic map with the teacher, and students deliberately working out the meanings and relationships between old and new words.

Research Findings/Results

Criteria for Marking

The marker was looking for the following:

1. Frequency of occurrence of target words;
2. Accuracy and appropriate use of target words;
3. Evidence of awareness of the relatedness of words.

The higher the frequency of occurrence and the higher the accuracy and appropriate use of the target words as well as evidence of awareness of meaning relations, for example, by the use of synonymous and antonyms, the higher the likelihood that this was proof of the effectiveness of the technique used to teach vocabulary. See Table 1.

Table 1: Pre-Test Results

Total Possible Score 20/20 (100%)

Mark %	0 - 49%	50 - 65%	66 - 100%
No of Students	N=40 18(45%)	N = 40 22 (55%)	N = 40 0

Table 2: Post-Test Results

Total Possible Score 20/20 (100%)

Mark %	0 - 49%	50 - 65%	66 - 100%
No of students	N = 40 7 (17,5%)	N = 40 22 (55%)	N = 40 11 (27,5%)

An analysis of the performance of students in the pre-test shown in Table 1, after being taught by a definition and explanation technique reveals that 18 students out of 40 (45%) did not score above 50%. 22 students out of 40 (55%) scored between 50 - 65% and none scored above 65%. The performance of the same students after being taught using a semantic mapping technique (Table 2) reveals that 7 out of 40 students (17.5%) scored below 50%, that is 11 (28%) less from the pre-test.

The same number of students 22 out of 40 (55%) scored between 50 - 65%. However, 11 out of 40 students (27.5%) scored above 65% whereas in the pre-test no students scored above 65%.

Table 3: Frequency of Occurrence of Selected Words from target list

Word	Frequency	
	Pre- Test	Post - Test
Overtake	2	12
Accelerate	8	13
Swerve	4	6
Overturn	3	6

Frequency of occurrence of the selected words in the students' essays reveals that the frequency is higher in the Post-Test than in the Pre-Test. There was also higher frequent use of synonyms in the Post-Test, as shown in Table 4 below.

Table 4: Synonyms used for 'overtake', 'accelerate' 'swerve', overturn and their frequency.

Word	ALternative	Pre - Test	Frequency Post - Test
Overtake	—	0	0
Accelerate	Increased speed	5	2
Accelerate	Overspeed	0	10
Swerve	Lurch off	0	12
Overturn	Somersault	0	14
Overturn	Others	0	2

Except for the word 'accelerate' which has alternatives in the pre-test, the results show that all the other words do not have alternatives offered in the

pre-test. However, in the post - test the words have alternatives offered by the students. Table 5 shows semantic mapping categories.

Table 5: Semantic mapping categories

Category	Number of words
People	14
Sounds	18
Conditions	19
Vehicles	4
Effects of Accident	10
Parts of Vehicles	11
State of Driver	11
Feelings	16
Causes	21

Students found 8 categories into which they could fit vocabulary around the topic 'accident'. They came up with 124 words around the topic, which was twice as many as those in the target list.

In order to confirm the findings of the research, a quantitative analysis of the results was necessary. A t-test analysis was conducted and the following results were found:

t - test results

Paired Sample Test

	Mean	Std. Dev	Std. Error Mean	95% Confi- Inter- val of the Difference	t	df	Sig. (2- tailed)
				Lower			
Pair 1: VAR00001 - VAR00002	-9.5500	9.85003	1.55743	-12.7002	-6.3998	-6.132	39.000

Hypothesis testing

Ho: there is no difference in the effectiveness of method A and method B

Ha: there is a difference in the effectiveness of method A and method B

Type of test: 2 tailed t test

Level of significance = 10%

$$/2=0.05$$

Calculated p value = .000

Result: since the calculated p value = .000 < 0.05

Reject Ho and conclude that the methods' effectiveness differs.

Discussion

From a purely statistical point of view the experiment showed that the students learnt more words through a semantic mapping technique than a definition and explanation technique. However, more important is the fact that they were able to categorise these words. During this process it is noted that they were able to determine which words belonged to the same semantic field before they could categorise them. It is this process, in part, which is believed to increase learners' awareness of the relatedness of words as well as to refine the meanings of the words.

That this is what indeed, occurred in this particular experiment, can be borne out, first, by the analysis of the frequency of occurrence of selected words from the target list and, secondly, by the analysis of the use of alternatives or synonyms by students in both the pre-test and post-test and, more so, by the t test. Although there was a deliberate and focused attempt by the researcher to teach the words 'overtake', 'accelerate', 'swerve', and 'overturn' through a definition and explanation technique, the words occurred in the students' essays only 2, 8, 4 and 3 times respectively. On the other hand, although there was no conscious attempt to teach the same words through a semantic mapping technique, the brainstorming, categorisation and discussion may have resulted in the words being assimilated, accommodated and internalised.

Coming to the actual test-scores, after the use of a definition and explanation technique, results reveal that almost half the sample 45% performed below 50%. Since the marker was specifically looking for frequency of occurrence of target words, accuracy and appropriate use of the target words and a good understanding of the fact that words are related, it will be seen that the students did not perform well. A comparison of the pre-test and post-test

results reveals that the number of students scoring below 50% has been considerably reduced to 7 (17,5%) from 18 (45%).

It is also realised that although there are the same number of students in the pre-test and post-test who scored between 50 - 65%, there are in fact 11 (27,5%) students who scored above 65%. This is a marked improvement because no students in the pre-test scored above 65%. This may lead to the conclusion that the performance of the students improved because of being taught using a semantic mapping technique.

The results of the t-test reveal beyond any shadow of doubt that the post-test in which the semantic mapping technique was used is more effective than the first method in teaching vocabulary.

Conclusion

From the findings of this research it can be concluded that while we accept that learning does take place when one uses a definition and explanation technique to teach vocabulary, a more effective technique would be a semantic mapping technique. The researcher has been led to this conclusion because the results of the research have revealed that learners gained more control over words in terms of their meaning and use in the post-test. Students gained an awareness of the fact that words collocate and are related to each other in a way which creates a semantic map or web of meaning. It is this awareness of the relatedness of words that is important: The new vocabulary should fit in with the already existing vocabulary in the child's mental lexicon.

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