The Potential of Semantic Mapping to Develop the Vocabulary of Second Language Learners

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ABSTRACT

Semantic maps are perceived as an effective strategy to learn vocabulary because they present the learners with a mechanism to organize the prior knowledge with the new knowledge in diagram form providing a simple syntax to interpret meaning. This study devoted to investigate if semantic maps could effectively be utilized during reading lessons in adult second language learning context to promote the acquisition of words and to retain those in memory compared to the conventional glossaries or word lists. Since limited vocabulary often negatively impacts on the academic performance, there was a need to identify a method to stimulate the learners to focus on words, understand those and to add those to the existing repertoire. 143 first year undergraduates of the Faculty of Technology participated in this research during the reading sessions for five months by creating five semantic maps as collaborative tasks and three semantic maps as individual tasks. They initiated the map using prior knowledge in one colour at the pre-reading phase, added branches to the map in another colour with the fresh knowledge at the while-reading phase and produced a paragraph in their own words based on the map at the post -reading stage. Further, they also filled the blanks of a summary which focused the key words from each passage one or two days after the lesson. A questionnaire was circulated among the participants to obtain their views over the experience, and the findings revealed that learners perceived semantic mapping to be effective in vocabulary development.

Keywords: Semantic maps, prior knowledge, mental lexicon, schema

1. INTRODUCTION

Vocabulary is an indicative of one's knowledge of a second language. So, the attention mainly given on teaching four skills has now been directed at this aspect of the language. The conventional style of learning vocabulary through word lists is both boring and ineffective as it cannot motivate the English as a Second Language (ESL) learners to expand their word knowledge. Employing a strategy which enables the learners expand their vocabulary is a challenge. Semantic mapping has been identified for its potential to recall the previously learnt vocabulary connected to a specific theme as well as to combine newly learnt vocabulary into the existing repertoire.

Further, it requires the learners to organize the words into graphic form which is interesting. Gabb (2000) identifies 'limited vocabulary' and 'lack of schematic knowledge' as barriers to reading comprehension. So, an approach that addresses this issue and facilitates vocabulary learning will be a vital requirement at ELT context. The knowledge a reader already possesses with regard to a topic determines how well he comprehends the text and how well he remembers the content (Oransu, 1986).

First language (L1) acquisition provides the ideal context for gaining extensive real world experiences and enlarging one's world knowledge for which there is no substitute. Yet, even at the second language classroom, the teacher has to design lessons and to employ methods to facilitate a similar process. Since vocabulary was an area which was neglected or left purely for the learners to take care of on their own through ways like word lists and dictionaries, researching on this is a responsibility of an L2 teacher.

The rationale for choosing semantic maps to teach vocabulary during reading lesson was based on several factors. First, semantic maps are ideal for the freshmen during the intensive English course as most of them need to have a focus on vocabulary. As almost all have followed mother tongue medium education up to secondary level at schools, some of them require help even with basic vocabulary. Maps are a simple and an attractive way to learn vocabulary connected to a particular theme.

Further, the major objective of an initial English course is to prepare the participants to handle cognitively demanding texts of English of their main subjects. A focus on vocabulary provided through semantic maps teach them a technique to follow when they read subject related texts or study any lecture notes. Since such materials generally have a complex syntax which inhibits second language learners from acquiring the full meaning of the passage, a map provides them with a structure which carries a simple syntax. It facilitates retention of important words in their memory.

Another vital factor is that the methodology practiced to teach a language course like English often involves collaborative tasks. Semantic mapping serves as an appropriate activity for such learning. Moreover, university entrants being a population recognized for their higher intellectual capacity possess knowledge generally about the world and specifically about the subject which is acquired mostly through mother tongue. So, this knowledge can easily be transferred into a second language like English. When semantic maps are used at the pre reading stage, it provides avenue for brainstorming or activating

schemata of past knowledge, and when the same map is expanded at the while reading stage with the new words or knowledge gained out of the text, it facilitates both acquisition of vocabulary as well as organizing those into the existing system.

This study aims to find out whether maps can effectively be used in the reading lesson to help learners acquire lexis. Since vocabulary is remembered when they are used meaningfully in graphic form, maps can be made use of to retain the key words in memory. Further, fill in the blanks activities administered later can trigger the memory and can facilitate the recall of the vocabulary.

1.1 Research Problem

Poor vocabulary is an interfering factor for the undergraduates to follow their mainstream subjects in English medium. The subject related texts consist of key terms, yet the learners often find reading to be a boring exercise, and consequently do not make an adequate effort to learn them. Though semantic maps may stimulate them to read and to use the key vocabulary in different activities, the success of this methodology depends on how well the students will welcome it.

1.2 Objectives

To obtain learner views about semantic maps as an effective way to improve vocabulary.
To obtain learner views about semantic maps as an effective way to recall and retain vocabulary.
To compare semantic maps with traditional word lists to identify the more effective strategy for vocabulary building

1.3 Significance of the Study

A few research has been conducted in Sri Lankan university context to identify the effectiveness of semantic mapping. Further, no research was found in literature which utilized a guided reading approach that combined collaborative and individual semantic mapping in both physical and virtual classrooms with summarizing and gap filling activities at the post reading stage. So, the findings of the research are significant. Any positive outcomes received can well be incorporated into reading instructions of adult second language learning context.

2. LITERATURE REVIEW

As per Paivio (1986)'s dual coding theory, semantic maps created out of texts facilitate cognitive representation of data or vocabulary in both verbal and visual-spacious memory which two areas reside separately but are interconnected in the brain. So, these links seem to provide advantages over recalling the words and transferring the words into another situation. Involvement Load Hypothesis (Hulstijin and Laufer, 2001) states that retention of words is contingent on the active involvement or the extent to which a learner interacts with a word; thus, transferring it into the long-term memory. The retention of an unfamiliar word in memory will; therefore, be an outcome of the amount of 'need',

'search' and 'evaluation' extended in practising that. The 'need' component is non-cognitive and emphasizes the role of both extrinsic and intrinsic motivation whereas 'search and evaluation' are cognitive during which the learner attempts to identify the meaning of an unknown word and match it or its meaning with what is already known (Hulstijin and Laufer, 2001, P-543).

Mental lexicon organizes semantically related items together in our brains, and semantic maps as a strategy facilitate this by providing a kind of template to structure the new knowledge with the existing knowledge. Compared to the glossaries or word lists which encourage rote learning or acquiring vocabulary though extensive repetition until the item fixes in the memory, semantic maps are more effective. That is because they are built on the learners' background knowledge and schema and further they are drawn through in-depth focus, a concept that underlies the Depth of Processing Hypothesis which states that the more cognitive energy a person exerts when thinking about a word, the better he will be able to recall and use it later (Craik & Lockhard, 1972).

Hsiao and Oxford (2002) maintains that "Memory strategies are particular Mnemonic devices that aid learners in moving information to long-term memory for storage purposes and retrieving it from long-term when needed for use" (p.371), and semantic mapping is a form of a visual picture which provides for that . Unlike memorizing word lists which involves 'shallow processing', collaborative semantic mapping which makes avenue for discussions, referring to words in the dictionary, recording it in diagram form using colours etc. facilitate 'deep processing 'which leads to long term memory. (Chen, 2005)

A research of experimental design between traditional word translation approaches vs. Semantic mapping conducted in Iranian university context revealed semantic mapping to be more effective in vocabulary learning. Khoii and Sharififar (2013) too studied on the effects of rote memorization and semantic mapping over vocabulary acquisition through an intervention of four months; however, the results did not prove any statistically significant difference in the two approaches.

Svenconis and Kerst (1995) who researched on teaching vocabulary through semantic maps at hypertext context found that those maps which associated with sound were more effective than word lists presented without sound. The additional advantage placed due to sound or pronunciation of words had facilitated retention of the words in memory. There had been many research that have proven the potential of semantic mapping in expanding vocabulary (Marin & Goebel, 2001, Sagarra & Alba, 2006)), so at present it is more justifiable to identify the learner views at a particular teaching learning context before introducing it into reading lessons extensively.

3. METHODOLOGY

This research was a survey questionnaire in design. A convenient sample of 143 first year undergraduates of the Faculty of Technology, Wayamba University of Sri Lanka, received reading instruction during 5 months: the two months of English intensive course conducted physically when they were freshmen and the three months of LMS based first

year first semester English Course conducted immediately after it. The reading instructions were modified through the technique of semantic mapping and the related activities in order to expand their vocabulary, and the learner feedback was collected through a questionnaire which included both closed ended questions of Likert 5-point scale and open-ended questions eliciting their responses over the experience.

During the reading sessions of English intensive course, they produced 5 semantic maps as collaborative activities whereas during the LMS based online course, they produced 3 semantic maps as individual activities. The mapping strategy expanded into all three phases of the reading lesson: pre-reading, while reading and post reading. As a 'pre-reading' activity, they initiated the map using one colour based on the prior knowledge related to the particular theme of the text such as 'technology, computer based health issues, plants etc., and after answering the reading comprehension questions at the 'during reading' stage of the lesson, they added branches to the same map in another colour based on the new knowledge gained from the text. Finally, they produced their own summary of the text based on the map at the post reading phase. One or two days later, they also engaged in a gap-filling activity- a paragraph with blanks, focusing the important key-words from the text.

During the first year first semester LMS-based English course too, the learners were guided to use the same strategy individually in creating maps and to write the paragraphs individually based on the maps and to do the gap filling activities on a later day. At the end of the intervention, a questionnaire was administered to obtain their views over semantic maps as a mean to develop the vocabulary. The data were analyzed quantitatively by using descriptive statistics as well as qualitatively through simple coding.

The rationale for using this methodology was that it was deemed important to find out the learner preference over both the traditional approach of vocabulary learning through word lists and the more cognitively demanding semantic mapping. Since the effectiveness of semantic mapping has already been proven, an attitudinal questionnaire was thought of as a better appropriate tool than any other statistical tool that analyzed the impact of the methodology. Thus, the data received from a questionnaire was considered vital as it addressed the 'need' factor which measured the intrinsic motivation of learners to contribute to maps actively and to refer to them willingly which would eventually make the reading lesson successful.

4. RESULTS

Six questions from the questionnaire (Table 1) which denoted specific responses were analyzed both qualitatively and quantitatively to see whether semantic mapping could be used as an effective technique during reading sessions to teach vocabulary. The feedback received for two open-ended questions eliciting the learner responses over what they liked (Table 2) and disliked (Table 3) about semantic mapping were coded and analyzed qualitatively to identify their genuine thoughts over the experience.

The questionnaire comprised of statements both in favour and against semantic mapping to avoid or minimize blind choices, and out of the six questions selected for the analysis,

the first and fifth statements were negative comments over the technique while the rest were positive. The positive feedback (Table 2) received could be coded as "Improve vocabulary, Recall past vocabulary, Retain vocabulary, Interesting technique, and Effective technique". The five codes identified for the negative feedback were "Time consuming, Difficult task, Lack of skills, Additional work and No dislikes".

The data received on statement 1 (table 1) showed that the learners found mapping to be beneficial. 83% either disagreed or strongly disagreed that it was 'difficult and time consuming'. This response was quite compatible with the open feedback presented on table 2 which stated that mapping expanded their vocabulary (A), helped them in recalling and practising past knowledge(B), and retaining the vocabulary in mind(C). Even when the 'time consuming factor' was mentioned as feedback (Table 3), the comments were not given as sheer criticisms over the methodology, but as something to be compromised or tolerated considering its manifold benefits (F1,F2,F3,F4).

Table 1: Learner perceptions on semantic maps as a way to build up their vocabulary

Statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. Creating word maps was a difficult and time consuming exercise	18%	65%	7%	9%	1%
2. Word maps helped me recall words that I had learnt in the past.	-	2%	11%	37%	50%
3. Word maps helped me learn new words.	-	6%	9%	28%	57%
4. I think I will remember the new words because of mapping technique.	-	3%	8%	40%	49%
5. I like to learn new words though word lists than through maps.	32%	50%	7%	5%	6%
6. Because of word maps I was able to fill in the gaps of paragraphs easily.	-	-	3%	18%	79%

Semantic mapping had also activated the learner schema over the past knowledge; thus, enabling the recall of previously learnt words connected to a specific theme (Statement 2, table 1), and 87% was in favour of this view. The initial mapping done at the pre-reading

phase of the lesson seems to have facilitated this. Moreover, as they used different colours for the words added at each phase, they could evaluate the extent at which the words had been recalled and organized into clusters during each reading stage. The evidence provided for this (table 2-B) shows that learners liked mapping for it "helps recall the words" (B1), help them "think of all connected words they knew in the past" (B2) and for the opportunities it provides at the pre-reading stage to recall past knowledge (B3).

Table 2: Sample thoughts over semantic mapping extracted from the questionnaire in response to the open-ended question "What did you like about learning through word maps".

Code	Thoughts
A: Improve vocabulary	A1:"It is very important to improve my English vocabulary" A2:"It is a good method to learn new words" A3:"It was very good help to find words for the essays and examples. I found so many new words and phrases" A4:"My English knowledge was poor. Because of participating in word map activity, I improved a lot" A5:"We checked the spelling of words while mapping so improved spelling."
B: Recall past vocabulary	B1:"It is very useful as it helps to recall the words" B2:"Maps helped us think of all connected words we knew in past" B3:"We could add many words to a topic before reading and it helped recall past knowledge"
C: Retain vocabulary	C1:"When creating word maps individually, it helps to remember the words" C2:"I studied easily and created sentences easily. Word maps are remembered in my mind after a few days. It was very useful" C3:"We filled the gaps correctly as we remembered the words a later day"

Code	Thoughts
D: Interesting technique	D1:"When we were drawing maps, we enjoyed it very much" D2:"Enjoyed it because it was a teamwork" D3:"It is fun and could learn many words"
E: Effective technique	E1:"It is the best way to learn vocabulary" E2:"We can use word maps for very difficult topics and get words to express ideas" E3:"I really like the way it gives classified information and the times of creating word maps with our lecturer was meaningful and effective" E4:"I like word maps very much because using them we can write essays with best vocabulary and write best answers at exams" E5:"I learnt a new technique to learn new words effectively" E6:"It covers almost all the parts of the topic and it rarely misses the points. So, I like it a lot"

Majority (87%) also agreed that word maps helped them learn new words. The highly positive figures can be attributed to the motivation the activity created in the learners to refer, discuss and design the map collaboratively or to refer, read attentively & design the map individually which ultimately facilitated acquisition of vocabulary. The open feedback recorded under the code A of table 2 reflect that the participants genuinely felt that their word power grew because of mapping (A1, A2, A3, A4) and they worked hard on it(A5).

89% perceived that word mapping developed their memory capacity or ability to recall words (Statement 4: table 1) when required- a fact proven by both Involvement Load Hypothesis (Hulstijin and Laufer, 2001) and Depth of Processing hypothesis (Craik & Lockhard, 1972). Due to the cognitive energy exerted to identify the meaning of a new word, to place it at the right end of a cluster, and to use it correctly in cloze tests and summaries, the learners were confident that they would remember the word for later use. The learner thoughts (Table 2: C1, C2, C3) provide strong support for the impact mapping had on them.

Table 3: Sample thoughts over semantic mapping extracted from the questionnaire in response to the open-ended question "What did you dislike about learning through word maps".

Code	Thoughts
F: Time consuming	F1:"The only one dislike is time. This map need some time" F2:"It was a little bit time consuming one" F3:"Word maps are good always. But, the thing is when we are doing them, it takes some time to think of sub sections & the accuracy level" F4:"It may reduce time for doing other things"
G: Difficult task	G1:"It is difficult to add ideas when topic is hard" G2:"Sometimes I get stuck in dividing categories" G3:"Sometimes topics we do not know much cannot do word map"
H: Lack of skills	H1:"I don't know difficult words" H2:"My art is bad"
I: Additional work	I1:"Want to study lot of material to do that" I2:"It is difficult to create them without reading a lot of time"
J: No dislikes	J1:"I don't dislike this" J2:"I like it very much. No dislikes"

The statement 5 aimed at identifying the preference of the learners over the two vocabulary building strategies: the word lists and semantic mapping. The data reveals that majority (83%) disagreed the given statement of "I like to learn new words though word lists than through maps," and; thereby, chose the more cognitively demanding mapping over the less cognitively demanding word lists as the method of preference to learn vocabulary. All the positive feedback given in table 2 can be quoted as reasons accounting for this. Considering the sample thoughts presented under code E: Effective technique, some participants believed it to be the "best way to learn vocabulary" (E1), a great way to handle "very difficult topics and get words to express ideas" (E2), a "meaningful and effective" method to gather "all points", organize those and produce good "answers at exams" (E3, E4, E5).

Statement 6 (table 1) of "Because of word maps I was able to fill in the gaps of paragraphs easily" has received the highest positive response of 97% proving the effectiveness of mapping technique to retain words in memory. As Hulstijin and Laufer explained in the Involvement Load Hypothesis (2001), the learners have been able to do the fill-in the gaps activity successfully first as they enjoyed mapping (D: interesting

technique-table 2) fulfilling the 'need' factor, and then as it provided an opportunity to 'search and evaluate' new words utilizing a lot of energy to find the meanings of unfamiliar terms and to match it with the existing knowledge.

Overall, the sample thoughts on table 2 evidence that the learners value semantic mapping both as an interesting technique and as a powerful tool to enlarge their word knowledge. Even under table 3 which required them to express what they disliked about mapping, the last category of "No dislikes (J)" which comprised of responses like "I don't dislike this (J1) and "I like it very much. No dislikes (J2)" were interesting to note. Moreover, the code F of "lack of skills" consisted of thoughts which did not criticize the technique of mapping; instead, they valued it and gave it as a self-criticism for lack of skills (H1, H2). Even under the other categories such as "time consuming, difficult task, additional work", the comments had not been given as criticisms and rather they were observations that had been expressed in a polite and controlled tone by using words that weakens the effects of negative comments (F1: "The **only one** dislike is time. This map need some time." F2: "It was **a little bit** time consuming one." F3: "Word maps are good **always. But,** the thing is when we are doing them, it takes some time to think of sub sections & the accuracy level." F4: "It **may** reduce time for doing other things."). This proves the fact that the students had welcomed mapping to be beneficial.

5. CONCLUSION AND RECOMMANDATIONS

The data received for both MCQ questions (Table 1) and the open ended questions (Table 2) reveal that semantic mapping is an effective way to learn vocabulary. As per the learner perceptions, it facilitates recalling past learnt vocabulary, acquiring new vocabulary as well as retaining vocabulary in memory for a long period of time. The learner feedback further reveals that compared to the traditional method of learning words through glossaries and word lists, sematic mapping is interesting and effective. Collaborative mapping can be used initially in physical classrooms to create a cheerful classroom atmosphere promoted through a collective effort, and gradually individual mapping opportunities can be created either in physical or virtual classrooms to give extensive practice over it. Post reading activities should also be encouraged to help learners retain the words that they have learnt. So, a combination of interactive and individual semantic mapping along with summarizing and gap-filling exercises can be recommended for the reading lessons of the adult second language learners to expand their word power in an automatic, effective and fun way.

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APPENDIX

Questionnaire

This questionnaire aims to identify your genuine feelings over the experience during reading sessions. Please answer the questions based on your genuine experience over the past few sessions.

Please circle the answers of your choice for the MCQs on statements 1-21. Mark X on 1, 2, 3, 4, 5 as you think best matches/ reflects your opinion.

<u>**Part A: Word maps in reading lessons**</u>

1. I enjoyed creating word maps.

Strongly disagree   1   2   3   4   5   strongly agree

2. Creating word maps was a difficult and time consuming exercise.

Strongly disagree   1   2   3   4   5   strongly agree

3. Word maps helped me recall words that I had learnt in the past.

Strongly disagree   1   2   3   4   5   strongly agree

4. Word maps helped me learn new words.

Strongly disagree   1   2   3   4   5   strongly agree

5. I think I will remember the new words because of mapping technique.

Strongly disagree   1   2   3   4   5   strongly agree

6. I like to learn new words though word lists than through maps.

Strongly disagree   1   2   3   4   5   strongly agree

7. I enjoyed adding words to the map before answering reading comprehension questions.

Strongly disagree   1   2   3   4   5   strongly agree

8. I enjoyed adding words to the map after answering reading comprehension questions.

Strongly disagree   1   2   3   4   5   strongly agree

9. Writing our own paragraphs after the word map was interesting and effective.

Strongly disagree   1   2   3   4   5 strongly agree

10. Because of word maps I was able to fill in the gaps of paragraphs easily later.

Strongly disagree   1   2   3   4   5 strongly agree

11. Teacher creating maps on the board for the student responses is better than students doing it on their own.

Strongly disagree   1   2   3   4   5 strongly agree

12. Creating word maps individually is better than creating them interactively as a team.

Strongly disagree   1   2   3   4   5 strongly agree

13. What did you like about learning through word maps?

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14. What did you dislike about the word maps?

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