HOW SAMR-BASED VOCABULARY TEACHING SHAPES VOCABULARY LEARNING STRATEGIES

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Abstract

The study was aimed at identifying the learners' vocabulary learning strategies as they were engaged in tasks assigned along the SAMR model. A class of EFL learners was taught vocabulary with the assignments following SAMR. The model led them through four stages: substitution, augmentation, modification, and redefinition. The results showed that the learners increasingly used digital technology to accomplish their tasks. Their strategies were relatively more diverse, too. The metacognitive and social strategies, however, did not emerge substantially in their report.

Keywords: SAMR; digital technology; language teaching; vocabulary strategies

1. Introduction

The advancement in digital technology has ushered us in an era where teachers and students can integrate it into their teaching practice and benefit a lot from it. The integration moves along four stages that have been designated by Puentedura (2006) as Substitution, Augmentation, Modification and Redefinition (henceforth SAMR). While in substitution the teacher and students use technology merely to substitute for conventional techniques, the augmentation provides some functions that can enhance the learning experience. An example of the former is students' use of online dictionaries instead of typically bulky printed dictionaries. An example of the latter, on the other hand, is when students read a webpage and simultaneously look up some difficult words in an online dictionary. The next stage is modification, which allows for a novel design of the learning tasks made possible by digital technology. An example of this is students' use of multimedia to learn a set of new vocabulary. Ross, Li and Gunter (2018) argues further that in this stage technology should allow the learners to access a learning project, see their classmates' works and comment on them, thus creating a learning milieu independently of the teachers' intervention. Finally, a redefinition task enables teachers to create an entirely new learning experience which has never been

assigned before. According to Ross et al. (2018, p. 5) it is "where an entirely new task is available because of technology." It is to be noted that in each stage of the model digital technology is one of the main components. Without involving digital technology, an instructional activity cannot be regarded as a manifestation of the SAMR model. This characteristics accords with the general characteristics of the Millennial Generation, who, according to Battersby (2017), grow up with technology and are very adept at using smart devices and various application programs.

Furthermore, an instructional activity within the SAMR framework can be divided into two types: enhancement and transformation (Romrell, Kidder, and Wood, 2014). Substitution and augmentation are types of enhancement, while modification and redefinition are regarded as transformation. While the former refines the learning by making it more efficient, the latter involves the learners in activities that cover a broader scope and which often requires an integration of several different skills.

Against the background outlined so far, this research was aimed to identify the learners' vocabulary learning strategies as they were engaged in a series of tasks assigned along the SAMR model.

2. Literature review

In the area of vocabulary learning, a number of recent studies point out the benefits of using strategies to improve memorization and retrieval of the target words. Gang (2014) conducted a study of vocabulary learning strategies used by Chinese college students. The result suggested that while less proficient learners used repetition and association strategies most frequently, the more proficient learners varied their strategies and used them more consistently. This study suggested that diversity and consistency of strategies are instrumental to a successful vocabulary learning. Purwanti, Setiyadi, and Nurweni (2015) found out that students' strategies were highly correlated with their vocabulary mastery. A more recent survey by Zou and Zhou (2017) revealed that students used quite a wide range of vocabulary learning strategies to complement their conventional rote learning strategy. These recent studies underline the fact that conscious use of a wide variety of strategies have facilitated the learners' vocabulary learning. The current study aimed to see if these characteristics were amplified by the increasing demand of tasks throughout the SAMR model. The study intended to add to the whole picture of how SAMR model in the learning tasks impacts the learning strategies.

2.1 Strategies in SAMR context

A proper definition of learning strategies is in order. Cohen (2011, p. 7) defines learning strategies as follows:

> Thoughts and actions, consciously chosen and operationalized by language learners, to assist them in carrying out a multiplicity of tasks from the very onset of learning to the most advanced levels of target-language performance.

Cohen (2011, p. 10) also maintains that learning strategies are best considered as sequences of acts, as he contends in the following:

> There was, . . . consensus that strategies are generally not used in isolation, but rather in sequences . . . . This fact is often overlooked in studies which report on strategies as if the isolated use of each were the norm.

Learning strategies should be appropriate, diverse and purposeful (Oxford, 2004). A strategy can be a sequence of activities and "is more readily modified to suit the context" (Nisbet and Shucksmith, 2018, p. vii). Following this definition, a strategy in this present report is considered to comprise a sequence of activities, rather than individual acts, which help the learners accomplish learning tasks.

Bakti (2018) investigated the strategies for learning vocabulary used by 50 high school students in Indonesia. She found a number of strategies which she classified according to a taxonomy proposed by Schmitt (cited in Bakti, 2018). Guessing meanings from the context, asking friends or teacher about the meanings, studying and paying attention to the target words were reported to be the most frequent strategies. None of them, however, admitted having utilized Internet-based facilities or mobile apps. More importantly, the strategies were reported as individual acts rather than a sequence of acts that formed an array of strategies.

Hamilton, Rosenberg and Akeaoglu (2016) state that a lot more has yet to be explored in the application of SAMR in the educational field. Gu's survey (2015) indicated that students' strategies changed in the course of 6 months. This study provided evidence that strategies are subject to change depending on the dynamics of the learning demand. Mirzaei (2016) showed that learners who learned vocabulary through mobile application performed better than those who learned through pen and paper method. The lesson was carried out following SAMR model but it went as far as the augmentation phase only.

In their recent study, Nazri, Yunus, and Nazri (2016) reported that good language learners used their strategies very frequently, used more metacognitive strategies than cognitive strategies, and used more direct than indirect strategies. At the same time, Askar (2016) conducted a survey among 466 university students in Kurdistan and found that cognitive strategies were the most frequently used strategies, followed by memory strategies,

metacognitive strategies, and social strategies. Meanwhile, Lou and Xu (2016) claimed on the basis of their study that after receiving training in learning strategies, students reportedly used strategies that fell into three categories: metacognitive, cognitive, and social.

Akbari (2017) carried out another survey among ESP learners to identify their vocabulary learning strategies. She found that the most frequently used strategies were using bilingual dictionaries, and repeating target words in written or oral mode. No transactional strategy was used, indicating that the respondents never asked their classmates or teachers during their vocabulary learning. A recent study by Kulikova (2015) investigated the vocabulary learning strategies of 97 learners of Russian in a university in the United States. The most common strategies were using dictionaries, guessing, note-taking, and rehearsing through repetition. They also reported to do contextual encoding, activation, and affective strategies. While Kulikova's study offered an insight into the strategies by Western learners, it did not tell much about the diversity of strategies.

In the SAMR Model, the substitution and augmentation stages are considered as learning enhancement, while modification and redefinition are regarded as parallel to transformational learning (Kamijo, 2017). A study in this area was conducted by Azama (2015). In general, it was found that the students showed an improvement in their performance during the modification and redefinition stages. Also, many showed their interest in continuing the lesson by using technology. They tended to develop technology-related learning strategies when cooperating with their peers, and as a result improved their interpretive and presentational skills.

The current study aimed specifically at reporting sequences of acts that comprised learning strategies rather than single strategic acts. It was also designed to cover all stages in SAMR-based assignments and reveal how the students varied their strategies as they were engaged in the assignments. It also wanted to see whether social strategies are indeed scarce in a SAMR-based learning environment.

3. Methodology

3.1. Research objective

This study was conducted to see how learners of an English vocabulary class accomplished their learning as they were doing a series of tasks presented in a SAMR framework.

3.2. Research participants and procedure

This descriptive study involved first-semester students of English Letters who were taking vocabulary class taught by the researcher within the SAMR model. As such, it assigned the learners to do some tasks, with each task requiring them to use digital technology. At the end of each task, they were instructed to write the strategies they used for accomplishing the task. A more detailed description of each task of the stages is presented below.

The participants of this vocabulary course were 39 students in their twenties who were studying at English department at Universitas Ma Chung. In the class, they had to learn new words in a series of tasks within the SAMR model.

The first task, designed as a substitution stage in the SAMR model, instructed them to find a website containing academic words and then to learn those words. The second stage, designed as augmentation stage which followed three weeks afterwards, had the learners read a text and find the meanings of some academic words and other important words they found in it. The third task, intended as a modification stage, instructed them to use the academic words they had been learning in a brief essay of 500 words. They were asked to post their essays on *Edmodo*, and read their classmates' works and comment on the uses of some academic words there. Finally, the fourth stage, intended to be the redefinition stage, was comprised of two tasks. First, the students had to choose a text from the Internet that they liked and entered it into www.rewordify.com which would guide the learning of some target words in the text. The second task at this stage was making an essay using some academic words and submitting the text into www.lextutor.ca/vp/ in order to see the profile of the vocabulary in their own writing. Thus, the vocabulary learning was extended to writing. These two tasks were inconceivable prior to the era of technology-supported lessons, and the easy access to various websites that facilitate this kind of enhancement in vocabulary learning aptly fit the redefinition stage in the SAMR model.

The learners were asked to report the strategies they used for accomplishing each of the tasks above. Their reports were scored for diversity and use of information technology. Thus, for each set of strategies reported, two kinds of scores were given. The first score was given for the use of digital technology. A score of 1 was given to each receptive act of using the digital technology to enhance learning, i.e. whereby a learner merely reads a digital source or posts something on a certain digital platform without using it to process a certain set of input. A score of 2 was added each time a learner reported a productive use of digital technology, i.e. whereby a learner used it to process some language input. The second score was given for the diversity of strategies. A score of 1 was given for each strategic act reported. Thus, a sequence of

strategies that consisted of reading a word list, using mnemonic to memorize, and using the new words in sentences would be given a score of 3.

To ensure that the coding and the scoring were carried out with sufficient reliability, the researcher asked another senior lecturer to code and score the respondents' written reports. The coding and scoring from the researcher was then compared to that of the other rater to find the degree of interrater reliability. An analysis of Cohen Kappa was used with SPSS to find the reliability. The coefficient of interrater reliability was found to be 0.813, which was considered adequate.

3.3. Results and findings

The following tables summarize the reported strategies by the students. Table 1 below presents the strategies they used at the substitution stage (with AW = academic words, and AWL = Academic Word List):

Table 1. Strategies used at the substitution stage

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
Taking AW from a website, reading and memorizing them.	7	1	3
Taking AWL from website, reading and writing to memorize them.	5	1	4
Taking AWL from a website, reading them, memorizing them, consulting dictionaries	5	1	4
Taking AWL from a website, learning words not familiar, using mnemonics, consulting Google Translate.	4	1	4
Taking AW from website, writing them, searching for the meanings, highlighting difficult words, and memorizing them.	2	1	4
Taking AW from website, writing them, search meanings from online dictionaries, reading repeatedly.	2	1	4
Taking AWL from a website, reading them aloud for listening and memorizing.	2	1	3
Taking AWL from a website, reading them	1	1	2
Taking AWL from a website, reading them, practice them by writing sentences.	1	1	3
Writing AW	1	0	1
Taking AWL from a friend, translating them, writing them twice.	1	0	3
Taking AW from a source, writing them, looking up the meanings from	1	1	3

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
online dictionaries, writing down antonyms and determine the parts of speech of the words.			
Taking AW from a friend.	1	0	1
Taking AW from website, understanding them by looking at example sentences	1	1	2
Taking AW from a website	1	1	1
Taking AW from website, memorizing, repeating, using them	1	1	3
Taking AW from website, learning by reading and mnemonics	1	1	2

As the table above shows, reading the AW list and memorizing them are two prominently frequent strategies done by the learners. Most scored 1 in the use of digital technology, an indication that the task at this substitution stage did not prompt them to utilize the technology more frequently. In terms of diversity, some learners managed to use varied strategies such as using mnemonics, using *Google Translate*, writing sentences with the new words, and determining the parts of speech of the words.

The table below presents the strategies used at the augmentation stage:

Table 2. Strategies used at the augmentation stage

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
Using online dictionaries to find meanings, then checking the context to find if they make sense, then writing the meanings and memorizing them by reading.	5	1	4
Using online dictionaries.	5	1	1
Finding the meanings of difficult words, and memorizing them by reading many times.	4	0	2
Finding word meanings in online dictionaries, making sentences with new words, and reading them again several times.	4	1	3
Writing new words many times and reading them many times to memorize them.	2	0	2
Using mnemonics to learn some new words.	2	0	1
Writing down new words, finding meanings from online dictionaries,			

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
memorizing them by reading aloud.	2	1	3
Using Google Translate to find meanings, and asking friends.	1	1	2
Using online dictionaries to find meanings, comparing them to the text, and reading repeatedly.	1	1	3
Writing down target words, finding meanings from dictionaries.	1	0	2
Remembering movies which contain some new words.	1	1	1
Reading aloud several times.	1	0	1

As shown in the table above, many learners began using digital technology to accomplish the task. Online dictionaries were frequently accessed to facilitate the searching for word meanings. A number of students who made use of the digital technology also performed a sequence containing a variety of strategies, such as checking the context, writing the word meanings, making sentences with the new words, and then memorizing them.

The table below shows the strategies used during the modification stage:

Table 3. Strategies used during the modification stage

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
Finding topic of interest, then Combining AW to compose an essay and posting it on Edmodo.	15	1	3
Reading classmates' essay and commenting on the use of AW.	5	1	2
Choosing AW, making paragraph with the AW and posting it on Edmodo.	5	1	3
Finding info about the ideas from the Internet, choosing AW, writing essays, entering it in AW highlighter, and posting it on Edmodo..	2	2	5
Finding topic of interest, writing essays, replacing some words with AW and posting it on Edmodo.	2	1	3
Selecting AW, discussing with dad to find the topic, developing the topic into an essay, and posting it on Edmodo.	1	1	4
Searching ideas from the Internet, writing sentences/essays using AW, and posting it on Edmodo.	1	1	2
Opening Edmodo to read some classmates' essays to get an idea, finding relevant articles on Internet, opening AW on Edmodo,	1	1	4

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
writing essay using AW. Checking the Internet to find relevant materials, using AW in the essay, and posting it on Edmodo.	1	1	3
Writing an essay containing AW that have been memorized before, and posting it on Edmodo..	1	1	2
Searching AW in the Internet, using them to make sentences in the essay, and posting it on Edmodo.	1	1	3

As the table above shows, all learners now utilized digital technology to complete the assignment. At least two learners used the digital technology to make sure they had used AWs in their essays before posting them on *Edmodo*. As they used the digital technology more, they also used more varied strategies.

The table below shows the strategies used during the redefinition stage whereby the learners were instructed to utilize the website www.rewordify.com :

Table 4. Strategies used at the redefinition stage

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
Finding an article on the Internet, copying it onto rewordify.com, finding new words to learn, posting the words on Edmodo.	28	2	4
Finding an article on the Internet, copying it onto rewordify.com, finding new words to learn, comparing them to the results from Google Translate and some other dictionaries, posting the words on Edmodo.	1	2	5
Searching for an article on the Internet, collecting all academic words that have been learned, finding academic words in the text, pasting it on rewordify.com	1	2	4
Finding an article from the Internet, learning its vocabulary by listening, trying to find the meanings, practicing pronunciation.	1	2	3
Asking a friend for opinions on what article is worth reading, finding an article from the Internet, reading it, posting it onto rewordify.com, learning the new words.	1	2	4
Finding an article on the Internet, pasting it onto rewordify.com, learning new words, translating into native language some words still not	1	2	4

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
understood.			

Table 5 below shows the strategies used during the second task at the redefinition stage, i.e. where the learners had to write essays and entered them to the site www.lextutor.ca:

Table 5. Strategies used during the second task of redefinition

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
Deciding on a topic, browsing the Internet, searching for more AWs to be used in the essay, writing the essay, processing it in Compleat Lexical Tutor.	10	2	5
Watching video clips, deciding a topic, reading articles, typing the essay, processing it in Compleat Lexical Tutor.	3	2	4
Deciding the topic, browsing Internet, searching for more AWs to be used in the essay, writing the essay, processing it in Compleat Lexical Tutor.	2	2	4
Checking Instagram, deciding on a topic, writing essays, checking online thesaurus, revising it, processing it in Compleat Lexical Tutor.	2	2	6
Finding a topic, searching the Internet for references, asking friends, developing the essay, processing it in Compleat Lexical Tutor.	1	2	5
Writing the essay, processing it in Compleat Lexical Tutor.	1	2	2
Discussing with dad, searching through Google, making an outline, writing the essay, processing it in Compleat Lexical Tutor.	1	2	5
Writing a story in native language, translating it into English, processing it in Compleat Lexical Tutor.	1	2	3
Reading articles, writing the essay, processing it in Compleat Lexical Tutor.	1	2	3
Watching a movie, writing essay, consulting online dictionary, processing it in Compleat Lexical Tutor.	1	2	4
Checking Edmodo to determine a topic, checking out some social media, deciding a topic, writing it, processing it in Compleat Lexical Tutor.	1	2	4
Creating a question on Instagram to	1	2	5

Strategies	Number of students who use the strategies	Involvement of digital technology	Diversity
find a topic, decide on a topic, reading articles, writing the essay, processing it in Compleat Lexical Tutor.			
Reading articles, listing possible topics, rereading the AW list, deciding on a topic, researching a little about the topic, writing the essay, processing it in Compleat Lexical Tutor.	1	2	7
Playing a game to find a topic, writing the essay, processing it in Compleat Lexical Tutor.	1	2	3
Searching for texts in movies, summarizing them, using some AWs in the essay, processing it in Compleat Lexical Tutor.	1	2	4

As shown in the table above, most learners now used the digital technology not only to find articles and post their works but also to process their essays and obtain a vocabulary profile. This stage even prompted some of them to access online social media or watch movies to find ideas for their essays. Again, as in the previous assignment summarized in Table 1, their increased use of digital technology was also accompanied by increased variation of their strategies.

4. Discussion

The review of the state of the art in the previous section has underscored some important aspects of strategy use by learners. As many of the studies have shown (Gang, 2014; Purwanti, Setyadi and Nurweni, 2015; Zhou and Zhou, 2017; Akbari, 2017), diversity of strategies and consistency in its use are characteristic of modern vocabulary learning. The findings above showed that the implementation of SAMR to vocabulary learning still retained repetition of target words and dictionary use as typical strategies but at the same time also made them more efficient. With digital technology, learners could read a text and click on new unfamiliar words to immediately know their meanings. In addition, the introduction of SAMR model encouraged the learners to take up other strategies that were very much dependent on digital technology. As shown in the tables, the learners increasingly used digital technology and varied their strategies as they went through the SAMR stages. SAMR apparently made them make use of digital technology to enhance their learning. An earlier study of a similar topic and similar result was done by Horst, Cobb, and Nicolae (2005). In their study, learners who were asked to utilize online concordance, dictionary, cloze-builder, hypertext and self-quiz database were able to

learn academic words more easily, a proof that such immediate online assistants was favored by the learners.

The result of the current study is also parallel to Azama's research (2015), which showed that as the learners went through modification and redefinition stages, their performance tended to improve. A similar finding also came up from Mirzaei's study (2016), which showed that learners studying from mobile application performed better than those studying with pen and paper. Although Azama's and Mirzaei's studies were more focused on learners' performance and the current study was more oriented on learners' strategies, they underscored the potential of SAMR model to leverage the vital aspects of learning. Thus, by applying SAMR, it is apparently possible to get the learners to engage in the whole spectrum of vocabulary learning with considerable efficiency, that is, starting from receptive skills (reading new words and memorizing them) and gradually progressing to productive skills (writing essays with the new words). Without SAMR and hence without digital technology, getting the learners to move through this stage from receptive to productive skills would have been more time-consuming and exhausting. A vocabulary class conducted in this fashion would probably be confined to asking the learners to read print texts, memorize new words, and write essays with little chance to comment on each other. They would have no opportunity to select articles they like, nor would they know the proportion of academic words and other sophisticated words they use in their essays. In short, the SAMR model opened up a wider learning experience for the students and at the same time prompted them to use a more varied repertoire of learning strategies.

As they progressed through the stages, their cognitive activities also became more complex, starting from remembering new words to creating essays with the newly learned words. This progression fit the cognitive levels in Bloom's taxonomy. This conclusion finds support in Parris, Estrada, and Honigsfield's (2017, p. 39) statement below:

> An awareness of the level of technology integration that a learning actually demands will inform the creation of more cognitively challenging tasks for students because as we move up the SAMR ladder, we also move up the inverted taxonomy of Blooms.

In addition, Parris et al. (2017) also argued that the transformative level of technology is manifested when teachers tap into students' creativity by prompting them to respond to lessons in novel ways. This was apparent in the modification and redefinition stage of my teaching, whereby the learners were given opportunities to accomplish the tasks by utilizing the modern digital technology. Finding ideas from movies or *Instagram*, or playing a game (see Table 4

above) are just two examples of creative strategies that these students were able to use thanks to the redefinition stage of the SAMR model.

At this point, an implication for teaching-learning activities in the modern era may be drawn. First, as Sarafianou and Gavriilidou's study (2015) has shown, learning strategies are 'teachable', and therefore language educators should include strategy training that makes use of digital technology in the curricula. Second, teachers should familiarize themselves with digital technology integration into their teaching practices so as to encourage their learners to adopt more varied strategies, some of which have been made possible with the assistance of advanced digital technology. If teachers rely on print materials and hardly use facilities provided by the digital technology, chances are their learners' strategies would also be stifled. In the case of vocabulary learning, the learners would probably still be able to memorize new words but fall short of putting them in longer discourse with greater efficiency. Or, they might expand their receptive vocabulary learning to productive aspects such as writing essays using the new words, but without digital technology such undertaking will be more time-consuming and burdensome for the teachers. Without digital technology, it would be practically impossible for teachers to provide useful feedback about the profile of words that their students use in their essays, something which was accomplished very quickly by a versatile website like *Lextutor*.

As Akbari (2017) pointed out, learners' vocabulary learning strategies invariably included the use of dictionaries and repeated rehearsal of the target words. These two acts seem to be the most common strategies used by learners across cultures, teaching contexts, and fields. Nevertheless, as the results suggested above, once the learning is geared to SAMR model and tasks become increasingly complex, the learners seemed to adopt more diverse strategies than just the two typical strategies above.

It is to be noted that the learners did not seem to use metacognitive strategies, a set of strategies which manifested in conscious planning and monitoring of their own thinking and progress. Thus, this seems to present a rather different picture from what Nazri et al. (2016) have found. An explanation can be offered for this tendency. The respondents may have used metacognitive strategies but did not articulate them in their reports because such acts may have been so automatic they were not brought to the level of consciousness. Indeed, as Diaz (2015) indicated in his study, for metacognitive strategies to be brought to the level of consciousness, these strategies have to be directly modeled to the students. The students should have plenty of opportunities to practice them so that these strategies occupy the short-term memory and can be immediately reported when such necessity arises. In the case of the current study, since modeling and intensive practice of metacognitive strategies were not given to the students, they

understandably did not report their metacognitive acts although they may have apparently used those strategies.

Vaseghi, Mukundan, and Barjesteh (2014) argued that strategies can be influenced by tasks and learners' context. When learners are confronted with a difficult task, they tend to adjust their learning strategies. It follows from this that the changes of learners' strategies in this present study as they were going through the SAMR stages was attributable to that tendency. Each stage of SAMR demanded a new sequence of strategies, with each stage making the learners utilize the digital technology more intensively.

The changing nature of the strategies used by the respondents may have been the result of the tasks given to them. This is in line with Oxford's argument (2004: 23) that "the demands of the task . . . essentially prescribe which learning strategies will be effective." Chamot (2005, p. 112) also stated a similar argument below:

> Learning strategies are sensitive to the learning context and to the learner's internal processing preferences. If learners perceive, for example, that a task like vocabulary learning requires correct matching of a new word to its definition within a specified period of time (as in a test), they will likely decide to use a memorization strategy. A different task, such as being able to discuss the theme of a short story will require strategies different from memorization—such as making inferences about the author's intended meaning and applying the learner's prior knowledge about the topic.

As can be seen in the tables above, the strategies during the substitution stage made less use of digital technology than the strategies during the redefinition stage. In terms of diversity, the learners also tended to use a wider variety of strategies when doing the redefinition task than when doing the substitution task. This tendency accords with Chamot's statement above. As the learners progressed through the SAMR model, they adjusted their profiles of strategies.

A question that may arise following this explanation is whether more proficient learners used more diverse strategies than the less able learners. The findings, having been generated from a small-scale descriptive study, did not reveal this. However, an exploration into possibilities is always interesting. It was possible that the more advanced learners used more diverse strategies than the less able ones. On the other hand, it was equally possible that both types of learners did not differ in terms of diversity of strategies but in terms of the match between the strategies they deployed and the tasks they had to accomplish. Indeed, as Chamot (2005) argued on the basis of several studies, good language learners are more adept at matching their strategies with the tasks at hand. If this was the case, the more able learners in this study might have used relatively fewer strategies than the less able ones but might have been better in using the right strategies for the kinds of tasks at hand.

The findings showed that repetition and the use of dictionary were indispensable strategies for learning vocabulary. The high frequency of repetition during the substitution stage may be accounted for by principles of short-term memory (STM), and long-term memory (LTM). According to Macaro (2001), STM can only hold a limited number of items to be processed before they are stored in the LTM. At the beginning, word meanings are stored and then retrieved from LTM in a laborious fashion; however, this process becomes less effortful as whatever is retrieved is repeated over and over again. This explains why repeated reading, memorizing, and retrieving of the new words was very frequent during the substitution stage.

It is also worth noting that very few learners used social strategies, namely those that connected them to other people in some kind of social interaction. The finding was in line with that of Besthia (2018), who found that social strategies (for example, asking teachers for word meanings, or working with friends) were the most frequently used by Indonesian university students. Quite probably, as vocabulary learning is largely considered as an individual effort, learners prefer using all other strategies by themselves to interacting with others. Some of the social strategies used by the respondents were interesting, though, and teachers could tap into these strategies in order to raise their students' social awareness.

A question that may be asked regarding the profile of strategies in the tables above was why some learners seemed to report very little, especially during the substitution and augmentation stage. This behavior seems to be related to motivation. As Macaro (2001) argues, motivation is strongly linked to the use of strategies. This entails the motivation to report the strategies, too. Thus, highly motivated learners not only use more strategies but also report more strategies when asked to articulate them. It was quite possible that those respondents who reported using more strategies were more highly motivated than those who did not. Another explanation may be related to consciousness of strategy use. As Macaro (2001) points out, many of the cognitive strategies are commonly executed automatically and therefore defied verbal reporting. Some respondents may have used cognitive strategies which they did not report because they were less aware of these automatic mental processing.

The study was not free from some limitations and therefore needs to be interpreted cautiously. First, the descriptive design could not indicate whether the SAMR model really influenced the learners' strategies because no comparison was made to another group of learners not taught with SAMR. It is suggested, therefore, that further research should use a more robust design such as an experimental design to assure that the model indeed promotes a change in the learning strategies. Secondly, the respondents were not divided into groups bearing some characteristics that may have influenced the impact, i.e. female and male, high

achievers and low achievers, and ease of access to the Internet. Had this been done, the findings may have been a little more refined, with the strategies of each group being identified. Also, they were not taken randomly from a larger population. Thus, the respondents may not necessarily be representative of the wider population of which they were part. The findings, however, should be able to serve as a preliminary picture of strategy that learners use when engaging in SAMR-based learning activities.

5. Conclusion

The report presents an exploratory research in the area of vocabulary learning strategies. The research aimed to identify the vocabulary learning strategies of some EFL learners as they were engaged in a series of activities given within the SAMR model. Numerous previous studies revealed significant findings about learners' strategies; however, there was a need to conduct further research that would inform how learners managed their vocabulary learning while doing tasks that increasingly involved the use of digital technology.

The findings showed that as the learners went through the different stages of SAMR, they tended to use digital technology more frequently and use more varied strategies. Their vocabulary learning still relied on repetition and dictionary use, but, in the case of the latter, the process was made much more efficient by the use of digital technology. The SAMR model, particularly the modification and redefinition stage, expanded their learning scope by permitting them not only to memorize vocabulary but also writing essays with the new vocabulary they had just learned.

The data gathering technique did not reveal the use of metacognitive strategies by the learners. The fact that such strategies may have resided in their mind as part of a subconscious process may account for such absence. Similarly, social strategies were very scarce, indicating that the learners perceived vocabulary learning very much as individual tasks.

Finally, it can be recommended that language teachers be armed with the skills of integrating technology in their language teaching practices. The integration will benefit their students by enriching their learning experience and making it more efficient.

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