



Gestures in Prolonging Semantic Memory of Young EFL Learners: A Serial Retention

Nyak Mutia Ismail^{*}, Veni Nella Syahputri², Septhia Irnanda¹

¹Universitas Serambi Mekkah, Indonesia

²Universitas Teuku Umar, Indonesia

*Correspondence to: nyakmutiaismail@serambmekkah.ac.id

Abstract: This study aimed at putting an experiment to young learners in acquiring through the use of gestures as the treatment process. This study was carried out under the procedure of the quasi-experimental approach with repeated measurement design. There were 35 primary school students involved in this study. The data were gathered through pretest-posttest. After the pretest was administered, the treatment process was carried out during the three following weeks by teaching the students verb vocabulary using gestures. The post-tests were then administered repeatedly in the 4th, 6th, and 7th week after the treatment to see the level of their memory retention. Later, the data obtained were analyzed using repeated test analysis. The results unveiled that the use of gestures can definitely enhance the students' vocabulary intake. It implies that EFL teachers—especially those teaching youths—should consider integrating their teaching method with gestures, but they are expected to be more creative in generating understandable gestures to convey abstract verb vocabulary.

Keywords: abstract vocabulary; concrete vocabulary; gestures; semantic memory; working-memory

Recommended citation: Ismail, N. M., Syahputri, V. N., & Irnanda, S. (2022). Gestures in Prolonging Semantic Memory of Young EFL Learners: A Serial Retention. *Journal of Innovation in Educational and Cultural Research*, 3(4), 714-721.

INTRODUCTION

In the research on verbs for adults and children learners, it has been found that human body and its morphology are vital in higher cognitive procedures. Regarding the linguistic domain, body parts are often expressed by using nouns and they are also parts of relational meanings of semantic components (Bowerman & Brown, 2008). Related to nouns, body parts can perform numerous syntactic roles, such as denoting subjects and objects, as well as showing obliqueness of an object. Indeed, as nouns, the quantity of terms alluding to body parts is very limited, especially for small children. Body parts have fascinating concrete and theoretical qualities with regards to the two sorts of conditions that issue the language acquisition process: the observable world and the linguistic world. In the observable world, the socio-cultural and spatio-temporal occasions take place and the body only transports us, helps us with creativity, controls devices, nurtures us, senses risk and danger, and associates us to other people (Maouene et. al, 2011). Hence, similar case is hypothesized to similarly happen when verb is learned—particularly in small children where language are inquired rather than purposefully learned.

As it is supported by Snedecker and Gleitman (2004), children rely heavily on abstract cues, especially on linguistic cues). Further, it has been argued that infants toward the end of their first year can imply the concepts found in the relational meanings of events under the form of schemas of support, source, path, goal, causation, reading sources, and so on. Hirsh-Pasek and Golinkoff (2006) also support the idea that children start the process of verb learning at a general and conceptual level. The provision of explicit learning, such as gestures, can boost their vocabulary intake (Yaghoubi & Seyyedi, 2017). This implication also promotes positive teaching arrangements for young learners to be adapted by teachers in the classroom circumstances. In regards to learning, young learners use various learning strategies in learning vocabulary. To make the acquisition of new vocabulary increasingly proficient, young learners usually employ several strategies in learning vocabulary. As a matter of fact, strategies are employed by individuals when they attempt to adapt new learning process. In acquiring vocabulary, the state of visualization is frequently made (Ismail, 2017) and this happens both in mental and physical state. It happens to all new aptitudes, not only to language. The use of strategies can determine whether or not one will be successful in acquiring the second language student.

Oxford and Crookall (1990) propose four classifications of methods for vocabulary learning, namely decontextualizing, semi-contextualizing, completely contextualizing, and adaptable. Decontextualizing systems engage the words involved from a specific situation; thus, this kind of strategies would be suitable for memorizing new words. The example of this type is the use of wordlist, dictionary, and flashcards. Second, semi-contextualizing systems allow a certain level of setting that may be helpful for the student to memorize

the words. In this case, words are not utilized in a naturalistic correspondence. This classification involves word grouping, word or idea connection, visual/aural symbolism, physical reaction, physical sensation, and semantic mapping. Third, complete contextualizing systems are the systems where words are implanted in an ordinary open setting. In these systems, the learners are expected to read, write, speak, and listen. Last, the adaptable procedure is a method that can strengthen different systems at any piece of the relevance context. One of the instances of this strategy is an organized reviewing. As a result, it is important for young learner teachers that they involve—even though not all—these principles when they are teaching the students.

There has been an amount of research that investigates the use of gestures in vocabulary learning of a foreign language. One of which is a study by [García-Gómez and Macizo \(2018\)](#) that evaluated the effect of gestures on vocabulary learning, specifically on the learning of verbs and nouns. The experimental design was applied and the result showed that there were four distinctive methods employed during the experimentation: (1) relevant gestures, (2) irrelevant gestures, (3) meaningless gestures, and (4) no gestures. The results showed that the highest vocabulary intake occurred in the experimental group with relevant gesture, followed by no gesture, incongruent gesture, and meaningless gesture. It implies that congruent gestures can help learners in acquiring new vocabulary in the target language. Apparently, it is better to use no gesture at all than to use meaningless and irrelevant gestures—which may lead to cultural issues.

[Cao and Chen \(2017\)](#) also outline a great significance of gesture usage in language teaching and learning. In their study, gestures were found to be the key factor for children's second language acquisition. In addition, the use of gestures promotes positive attitude from speakers and listeners, the crucial role of gesture in the second. In addition to promoting positive ability in listening comprehension, the use of gestures can also help learners in lexical learning. All in all, gesture is considered a facilitating educational tool for both teachers and students in language learning. All in all, gesture is considered as a facilitating educational tool for both teachers and students in language learning. As it is admitted that attitude is the key factor in language learning, the involvement of gestures that can increase the positive attitudes of students is convenient information.

Another study is by [Macedonia and Kriegstein \(2012\)](#) that aimed at describing the behavioral and neuroscientific issues behind the use of gestures in L2 acquisition. It was found that the use of gestures can increase memory's ability to remember certain concepts for a longer period of time. However, the underpinning reasons concerning the neural mechanisms are still opaque. Further, they elaborate that motoric actions during the learning can promote the building of complex brain networks as it connects perception and psychomotor of the learners. The networks become stronger as more motor movements are made during the learning process, which will eventually protect the memory from degrading. Additionally, for abstract concepts, the use of 'scratches' in the air can embody the comprehension of the abstract word used.

In an EFL classroom, teachers act with a certain goal in mind. The manner in which they talk and move frequently changes gradually according to the classroom condition. They may adjust their discourse, heighten the verbalization of each word, or use the prosodic parameters to ensure that the students will comprehend them well. The teachers may also use gesture for a similar reason. They are not managing the ordinary informative signals used in daily conversation which are rather extensive. They rather use classroom signals which can enable the students to comprehend the verbal information which the movements depict.

Gestures and speech are closely interrelated. Using gestures integrates meaning and visualization of an object description for young learners ([McNeill et al., 2015](#)). Based on gesture taxonomy proposed by [McNeill \(1992\)](#), there are two types of gestures which are representational and metaphorical gestures. The initial one is iconic gestures used to intensify the meaning of an actual object being elaborated usually by using hands. Meanwhile, the latter is gestures used to clarify abstract concepts by involving concrete attributes to enhance the meaning. Moreover, it is known that there are deictic and beat gestures. Deictic gestures involve finger(s) to refer to a certain actual object while beat gestures are hand movement showing the intonation of the speech prosody. In addition, concerning to language learning in young learners, the use of gestures can spur the vocabulary intake because gestures provide more concrete meaning of the word which is understood as a clear mental image ([Goldin-Meadow & Alibali, 2013](#)). Briefly, these both types of gestures are significant in teaching learning process of a certain language because when a teacher explains, often times the meanings are not absolutely resembled by the translation alone. Gestures are always employed to enhance the meaning whether semantically or pragmatically. Teachers may use an act of drawing circles in the air, pouting lips and frowning eyebrows, and contracting eyesight to show the feeling of a not well-reached meaning of a word.

Albeit nonverbal correspondence offers information about what speakers are thinking or intending, cultural differences may hinder the understanding of the actual message ([Pennycook, 1985](#)). For example, facial expressions in Korean culture are not quite the same as those in Western societies in terms of nuance. In Japan, gestures and facial expressions serve as social functions, such as expressing politeness and formality ([Kagawa, 2001](#)). To add further, an eye-to-eye interaction is considered discourteous in Asian culture. [Matsumoto and Kudoh \(1993\)](#) found that American people tend to praise those who smile a lot with attributes such as intelligence, whereas in Japan, too much smiling is not perceived to correlate with intelligence. Moreover, the

use of hands during an interaction is often seen as an interactive means. McNeill (1992) states the use of hand-movement in a conversation is linked to the employment of semantic and pragmatic functions. Regarding the importance of vocabulary, Schmitt (2000) urges that lexical units are center to communicative importance. It is inferred that the knowledge on vocabulary is a vital tool for second and foreign language learners in the attempt to impede success in the L2 learning and acquisition. One of the teachers' concerns in teaching vocabulary is using the manner by which to pass on the implications of the words to the students. Young students consistently have issue in understanding the meaning and implications of the words. Therefore, using gestures can benefit both parties—the teacher and the students. For teachers, using gestures can encourage them to pass on the importance of the words to the students, while for students; gestures can shape the perception towards the words' significance (Shahabi & Shahrokhi, 2016).

Studies focusing on semantic memory impairment have been long carried out. It is where the differentiation of human mind category branches into concrete and abstract concepts of perception (Capitani et al., 2003). The distinction between concrete and abstract concepts is essential to be acknowledged in the significance of cognitive domains. Particularly, a person would easily identify concrete words such as spoon, shoes, and radio compared to abstract words such as anxiety, victory, and authority. Paivio (1986) has attributed three factors leading to this condition, namely 1) Abstract words, with fewer direct sensory referents, 2) In the real world, more referents support the learning of concrete concepts, and 3) Semantic features support more concrete concepts rather than abstract ones. In brief, the world provides more referents for concrete words, making it easier to learn them compared to the abstract ones.

Tulvic (1972) in Yee et al. (2017) has classified human's memory into *episodic* and *semantic* memory. *Episodic* memory holds short memories linked to a particular time and place such as where you put your keys; while *semantic* memories contain general knowledge about the world such as the concept of bicycle prototype. Tulvic's model perceives that both episodic and semantic memories are rooted to long-term memory and motor skill—which is named as *procedural* skill—is another root from the long-term memory. Yee et al. (2017) further deliberate that a strong relation between the cognitive and neural processes allows human to learn and acquire various concepts, both concrete and abstract concepts. They then suggest that the attempt to enrich individuals can be achieved by understanding semantic memory. Favaretto, et al. (2014) added that children employ more thematic strategies in the process of language learning: it is a strategy where children associate meanings with the actual features of the learned word. It implies that in vocabulary teaching and learning, it is essential to utilize a tool that can manage students not only in concern of the word learning but also of the word retention, especially for young learners.

A novelty offered in this current study is the outcome on how gestures help in retaining vocabulary for young EFL learners within a determined time frame. This study is deemed significant because English teachers can benefit from the results, which will help them to teach vocabulary—the core item of language learning—to young learners. Besides, the result is also expected to be the supplementary reference for future researchers on EFL cognitive studies. In accordance with the purpose, a research hypothesis is presented below:

H₀: Using gestures in teaching vocabulary does not increase memory retention on the words learned in relation to abstract and concrete verbs.

H_a: Using gestures in teaching vocabulary increases memory retention on the words learned in relation to abstract and concrete verbs.

METHODS

This study was carried out under the procedure of quantitative research; specifically, it is employing Repeated Measurement design. Repeated measures in an experimental study are appropriate when the same dependent variable(s) is in need to be assessed in different situations, settings, or times—over two periods or more (Salkind, 2010). Kabir (2016) further clarifies that this design is perplexed with the Single Group design, which is also rooted from quasi-experimental design. What differentiates Repeated Measurement Design from Single Group design is that the Repeated Measurement design takes on more than two tests, while the latter one only takes two tests which are pretest and post-test. In this study, regarding the case of mean comparison analysis, the t-test analysis was used. As supported by Mishra, et.al (2019), t-test is used to see significant difference between the mean score when involving 2 groups, while ANOVA is used when there are more than two groups. Hence, instead of ANOVA, t-test was cogently employed to find the mean difference in this study as it is considered to be efficiently representative.

The overall population involved in this study was 547 students at a public elementary school in Banda Aceh, Indonesia. The participants were originally 35 primary school students aged 11-12 years in Banda Aceh, Indonesia. They were chosen through cluster random sampling. Cluster random sampling allows the researcher to divide a population into groups so that the samples are taken from those existing groups (Wilson, 2001). The reason behind choosing this type of sampling is the immovable and rigid classroom divisions that have been set

by the school administration.

The instrument used for the data collection process was test which was administered as pretest and repeated post-tests. The test consists of 20 verbs—ten of them are concrete and the other ten are abstract. The words are for concrete verbs are *drive, fly, cry, fry, sweep, peep, hide, seek, listen, drink*; and the words are for abstract verbs are *forget, think, remember, know, try, understand, like, dislike, succeed, fail*. The first group of verb is considered as the concrete verb because there is an observable action that can be acted upon for each verb, while for the latter group, the verbs are included into mental verbs where there is no observable action that can be performed; so that the second group is considered as the abstract verb group. The validity of the instrument was Pearson Correlation $r=0.89$ and the reliability was Cronbach's Alpha $=0.77$. What students needed to do was that they were required to translate these 20 verbs in all tests (pretest, post-test one, post-test two, and post-test three) to later on be compared to see their memory maintenance of the verbs—how long they can remember and retrieve these verbs.

The particular procedure used during the data collection was as follows. The pretest was done on August 8th, 2018. The students were supposed to translate the words and they were given 30 minutes. The intervening treatment was carried out after the pretest. The treatment process was executed for 6 meetings; each meeting consisted of 40 minutes. This treatment was done on August 14th, 21st, 28th, September 4th, 10th, and 17th. The treatment which was scheduled once a week was used to teach the vocabulary that contained in the pretest by using gestures. Finally, the post-test was carried out on September 24th, 2018, October 1st and 8th, 2018; the procedures as well as the test items remained the same. After the data obtained, data analysis procedure was conducted using descriptive statistics involving test of normality and t-test. The SPSS version 20 was utilized.

To be specific, during the treatment process, the researchers taught 20 verbs to the students—10 of them are concrete verbs and the other ten are abstract ones. The concrete verbs are: (1) drive, (2) fly, (3) cry, (4) fry, (5) sweep, (6) peep, (7) hide, (8) seek, (9) listen, (10) drink; while the abstract verbs are (1) forget, (2) think, (3) remember, (4) know, (5) try, (6) understand, (7) like, (8) dislike, (9) succeed, and (10) fail. For three weeks, the exactly same verbs were engaged in the experimentation process. The explicit explanation comes as shown in Table 1.

Table 1. Gesture outputs

Verb	Gesture output
Drive	holding the steering wheel of a car
Fly	Stretching arms
Cry	Putting both grips on the eyes
Fry	Handling a spatula and make scooping movement
Sweep	Holding a broom and wipe over the floor repeatedly
Peep	Covering the face with both palm hands and make a gap in-between to see
Hide	Squatting with head looking down
Seek	Stranding the neck to the right and to the left, up and down
Listen	Rounding one of the palm hands in the form of a scoop and put it in the back of one of the ears, neck lowered to indicate focus
Drink	Rounding one of the palm hands as if holding a glass and shove it to the mouth
Forget	Tapping the forehead once
Think	Pointing the temple bone and tilting the head to one side—either right or left
Remember	Pointing the pointer finger to the air, eye widened and a happy grin on the face
Know	Frowning eyebrows and pouting lips, eyes constricted
Try	Two punches against each other
Understand	Nodding
Like	Smile and nodding
Dislike	Frowning eyebrows and pouting lips, head tilted backward
Succeed	Punching in the air and jump gently
Fail	Exhaling, decreasing the shoulders line

RESULT AND DISCUSSION

Before the data obtained from the pretest, post-test one, post-test two, and post-test three, the data were determined for its normality to see whether the data distribution is normal. It is found that the score

distribution from the group is normal ($Kolmogorov-Smirnov=0.75$; $sig.value \geq \alpha=0.05$, $df 33$). No homogeneity test was determined as there was only one group involved in this study. Later on, the hypothesis was tested to see whether there is an increase and maintenance along the treatment procedures that can be retrieved by the participants for three-week time-span. The table of the hypothesis testing is as shown in the Table 2 below.

Table 2. Hypothesis Testing

Test	Mean	Paired t-test	t-table	t-value	Accepted
Pre-test (X ₁)	43	-	-	-	-
Post-test 1 (X ₂)	77	(X ₁) and (X ₂)	$-0.28 \leq \alpha \leq 0.28$	0.27	H _a
Post-test 2 (X ₃)	78	(X ₁) and (X ₃)		0.19	H _a
Post-test 3 (X ₄)	70	(X ₁) and (X ₄)		0.21	H _a

The table shows that the mean score increase over times. In the pretest, the mean score is only 48. After six meetings of treatment, the score increased to 77. Later, in the second post-test which was administered a week later, the score increased one point to be 78. However, in the final post-test which was administered in the third week after the treatment, the score maneuvered to 70. Even though it decreases, it is still significantly higher than the first score gained in the pretest. The more specific results on each verb category are as shown in the following figures.

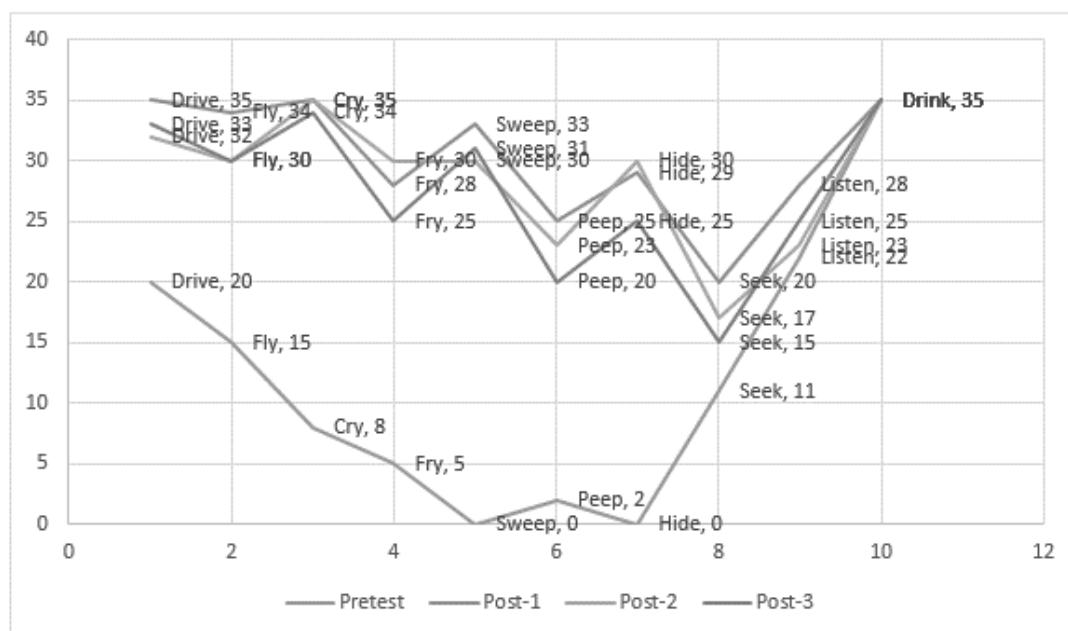


Figure 1. Concrete verb frequency

The Y-axis in the figure above represents ten concrete verbs which are (1) *drive*, (2) *fly*, (3) *cry*, (4) *fry*, (5) *sweep*, (6) *peep*, (7) *hide*, (8) *seek*, (9) *listen*, (10) *drink*; while the X-axis represents the numbers of students who can translate the word correctly. The curving lines indicate consecutive moving lines of the students' answer frequency. The pretest which is assembled by the lowest line shows that the verbs 'drive' and 'drink' are familiar to the students; while 'peep', 'hide', and 'seek' are the least answered. For 'hide' there were only two participants who answered correctly, while for 'peep' and 'seek', there was nobody who could answer them. Then, in post-test 1, the trend increased as we learn that 'drive', 'cry', and 'drink' were answered correctly by everyone, followed by 'fly' which was answered by 34 participants and 'sweep'—answered correctly by 33 participants. Later, in post-test 1, we see declination in majority where all word (except 'cry', 'hide', and 'drink' fade out in students' memory. Last, post-test 3 reveals similarity to post-test 2 where the memory on the majority of the words declined, except for 'drive', 'sweep', and 'drink'—which only inclined slightly. An interesting point from the figure is that the word 'drink' remained in the students' memory for the whole three weeks during the repeated test procedures. Succinctly, we can conclude that the students' memory keeps these concrete words longer after the three-week treatment process. In other words, the use of gestures increases students' memory retention towards concrete verbs. Meanwhile, the result for abstract verbs is as presented below.

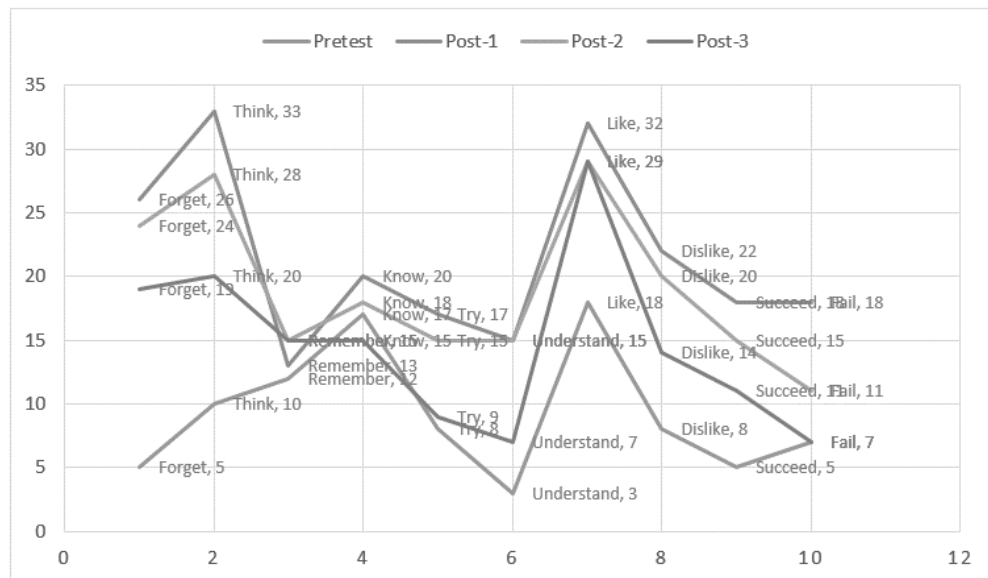


Figure 2. Abstract verb frequency

On the contrary, regarding the counterpart concepts—which is the abstract verbs, the can be seen in [Figure 2](#). The chart shows the frequency of abstract word occurrence made by the participants. The words are (1) *forget*, (2) *think*, (3) *remember*, (4) *know*, (5) *try*, (6) *understand*, (7) *like*, (8) *dislike*, (9) *succeed*, and (10) *fail*. From the pretest score, we can see that the most word occurrence is 'like', followed by 'know'. It is assumed that the students—although not even necessarily half—are already familiar with these words. In different circumstance, we can wind up a conclusion noting that the use of gestures does not increase students' memory retention towards abstract verbs. To come further to our discussion, we firstly find out that from the hypothesis testing, the application of gestures has a positive effect in teaching verb vocabulary to EFL young learners. Briefly, the alternate hypothesis is granted that the using gestures in teaching vocabulary increases memory retention on the words learned in relation to abstract and concrete verbs. However, more surprising results can be understood when closer glimpse to the concepts of concrete and abstract being parted as unequivocally corroborated in the following. To provide more in-depth discussions on concrete and abstract verbs separately, a frequency chart for each is provided below. Initially, in the following is provided the verb frequency occurred in pretest, post-test one, post-test two, and post-test three for concrete verbs (See [Figure 1](#)).

The result shows that the use of gestures increased the memory of vocabulary intake and helped the vocabulary to stay longer in the students' mind. [Tellier \(2008\)](#) has proven that the use of gestures is more effective than the use of visual techniques, including the use of pictures. This is further supported by [Mayer et al. \(2015\)](#) that when the students are asked to perform the gesture of a certain word, the process gets into a deeper perception which builds a stronger neural connection in their brain. As there were six meetings during the intervening procedure, the students repeated the same gesture multiple times for the same verb, allowing them to remember it for a longer period of time. This repetition simply activates the deep input processing and active learning of the students ([Laufer & Hulstijn, 2001](#)). Moreover, [Clark \(2016\)](#) reports that even for adults, the use of gesture works well. In his research, he involved adult students and treated those students using gestures during the vocabulary learning procedures. He found that the gestures did not only help the participants to remember the words better, but also promoted positive attitude in the learning process, both in the intrapersonal and interpersonal interaction. The result also clarifies that gesture is not only useful to act out a word, but also to determine the word length and the word intonation.

Regarding the results shown in [Figure 1](#), it is in line with [Cao and Chen \(2017\)](#) who state that gestures in vocabulary learning for children are seen as the key-tool because they can enhance the sensory perception through motoric movements of body parts. In addition, [Macedonia and Kriegstein \(2012\)](#) support the fact that gestures build strong interconnection within the brain which leads to durable memory retention. The more motor movements are made, the more neural sensory that is built, and the longer the information resides in the brain. Concerning [Figure 2](#) above, it is shown that the score increased in post-test 1. The highest increase is shown by the word 'think' as there are 33 students can translate it correctly. Then, the word 'like' is the second highest occurrence for there are 32 participants answered it. Later, in the post-test 2, the average score declines. And the post-test 3 shows even more dramatic declination except for the word 'like'. In brief, it shows that in relation to abstract word, the gesture technique is indeed useful. But when contrasted to concrete verbs, the abstract verbs tend to vanish more quickly from the students' memory.

As [Paivio](#) (1986) has urged that abstract concepts are not easy to be taught due to limited referents that can be used in the real world. More concepts provided in our surroundings are conceiving concrete concepts rather than abstract ones. So that, for children, even the use of gestures might not really help in helping them sustain the words longer in their mind. In addition, [García-Gámez and Macizo](#) (2018) allude that meaningless gestures do nothing to help. This proposition implies that, presumably, the gestures used during the teaching treatment procedure were considered meaningless by the participants. The most-remembered word is 'like', which was expressed in the gesture of enlarging eyes, smiling lips, and uplifting the eyebrows. However, an explanation beyond gestures could have happened in concern of the participants' perception.

In addition, [Crutch and Warrington](#) (2005) suggest that in semantic refractory access, the neural sensory built for abstract concepts is different from the ones built for concrete concepts. They also found that the neural sensory accommodating abstract concepts do not build up quickly. In addition, the frequency level (high or low abstraction) of a word also influences the brain sensory building. High abstraction would take longer time while low abstraction needs a shorter time. From our abstract word range, it is learned that the least remembered words are 'understand' and 'fail' which may be described as highly abstract verbs—especially for children. In addition, this is also related to the employment of metacognitive process during the learning. As supported by [Ramadhanti and Yanda](#) (2021), metacognition is very helpful in helping students during the learning process.

CONCLUSION

The conclusion that can be drawn upon the results and discussion of this study is that the technique of involving gestures in teaching vocabulary is an exquisite choice, especially for the young children. The action to move their body parts as they say the word can activate their visual-spatial ability to remember more as the word that they say connects to the action that they do at that moment. In contrast, this gesture-technique did not seem to work for the abstract *verb* vocabulary. The most probable factor causing this is the inappropriate gestures for each abstract *verb* vocabulary used during the treatment process. The findings of this research provide insights for English teachers to integrate gestures in teaching vocabulary, especially when teaching young learners. However, an issue that was not addressed in this study was whether the gestures work well with vocabulary beyond *verbs*. A further study could assess the long-term effects of gestures in other word parts such as adjectives and nouns.

REFERENCES

- Bowerman, M., & Brown, P. M. (2008). *Crosslinguistic perspectives on argument structure: Implications for learnability*, (pp. 1–26). Oxford University Press.
- Cao, N., & Chen, G. (2017). The role of gesture in the second language learning and teaching. *American Journal of Applied Sciences*, 14(12), 1070-1074.
- Capitani, E., Laiacina, M., Mahon, B., & Caramazza, A. (2003). What are the facts of semantic category-specific deficits? A critical review of the clinical evidence. *Cognitive Neuropsychology*, 20, 213–61.
- Clark, J. (2016). *Teaching L2 vocabulary with student- and teacher-generated gestures: A classroom perspective*. [Unpublished master thesis. Concordia University, Quebec, Canada.]
- Crutch, J., & Warrington, E. K. (2005). Abstract and concrete concepts have structurally different representational frameworks. *Brain*, 128, 615-627.
- Favarotto, V., Coni, A.G., Magani, F., & Vivas, J. R. (2014). Semantic memory organization in children and young adults. *Procedia - Social and Behavioral Sciences*, 140, 92-97.
- García-Gámez, A.B., & Macizo, P. (2018). *Learning nouns and verbs in a foreign language: The role of gestures*. Cambridge University Press.
- Goldin-Meadow, S., & Alibali, M.W. (2013). Gesture's role in speaking, learning, and creating language. *Annual Review of Psychology*, 64, 257–283.
- Hirsh-Pasek, K., & Glinkoff, R. M. (2006). *Actions meet words: How children learn words*. Oxford University Press.
- Ismail, N. M. (2017). "That's the biggest impact!" Pedagogical values of movies in ELT classrooms. *Studies in English language and education*, 4(2), 216-225.
- Kabir, S.M.S. (2016). *Basic guidelines for research: An introductory approach for all disciplines*. Book Zone Publication.
- Kagawa, H. (2001). *Ambiguous Japanese*. Koudansha International Publisher.

- Laufer, B., & Hulstijn, J. H. (2001). Incidental vocabulary acquisition in a second language: The construct of task-induced involvement. *Applied Linguistics*, 22, 1–26.
- Macedonia, M., & Kriegstein, K. (2012). Gestures enhance foreign language learning. *Biolingüistic*, 6, 393–416.
- Maouene, J., Sethuraman, N., Laakso, A., & Maouene, M. (2011). The body region correlates of concrete and abstract verbs in early child language. *Cognition, Brain, Behavior: An Interdisciplinary Journal*, 15(4), 449–484.
- Mayer, K. M., Yildiz, I. B., Macedonia, M., & von Kriegstein, K. (2015). Visual and motor cortices differentially support the translation of foreign language words. *Current Biology*, 25(4), 530–535.
- Matsumoto, D., & Kudoh, T. (1993). American-Japanese cultural difference in attributions of personality based on smiles. *Journal of Nonverbal Behavior*, 17, 231–244.
- McNeill, D. (1992). *Hand and mind: What gestures reveal about thought*. University of Chicago press.
- McNeill, D., Levy, E., & Duncan, S. (2015). Gesture in discourse. In D. Tannen, H. Hamilton, & D. Schiffrin (Eds.), *Handbook of discourse analysis* (pp. 262–319). Wiley.
- Oxford, R., & Crookall, D. (1990). Vocabulary learning: A critical analysis of techniques. *TESL Canada Journal*, 7(2), 09–30.
- Paivio, A. (1986). *Mental representations: a dual coding approach*. Oxford University Press.
- Pennycook, A. (1985). Actions speak louder than words: Paralanguage, communication, and education. *TESOL Quarterly*, 19, 259–282.
- Ramadhanti, D., and Yanda, D. P. (2021). Students' metacognitive awareness and its impact on writing skill. *International Journal of Language Education*, 5(3), 193–206.
- Salkind, N. J. (2010). *Repeated measures design*. SAGE Publication.
- Schmitt, N. (2000). *Vocabulary in language teaching*. Cambridge University Press.
- Shahabi, H., & Shahrokhi, M. (2016). Contributory role of the gestures and facial expressions in teaching concrete vocabulary items to Iranian elementary EFL learners. *Journal of Applied Linguistics and Language Research*, 3(5), 160–176.
- Snedeker, J., & Gleitman, L. (2004). Why is it hard to label our concepts? In S. Waxman & G. Hall (Eds.), *Weaving a lexicon*. MIT Press.
- Tellier, M. (2008). The effect of gestures on second language memorisation by young children. *Gesture*, 8(2), 219–235.
- Wilson, J. (2010). *Essentials of business research: A guide to doing your research project*. SAGE Publication.
- Yaghoubi, S. T., & Seyyedi, F. (2017). The effect of explicit and implicit teaching vocabulary on Iranian EFL learners' vocabulary. *Studies in English language and education*, 4(1), 15–25.
- Yee, E., Jones, K., & McRae, M.N. (2017). *Stevens' handbook of experimental psychology and cognitive neuroscience*. John Wiley & Sons.