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Effects of Dynamic Assessment on Improvement of Academic Vocabulary Knowledge of Thai EFL Low-Proficiency University Students

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ABSTRACT

Academic vocabulary is necessary for university students. Vocabulary learning strategies (VLS) assist students to enhance their vocabulary knowledge and should be examined in accordance with their dynamic nature (Gu, 2020). Dynamic assessment (DA) is considered an alternative assessment that simultaneously and systematically assesses and teaches students to reach their zone of proximal development (ZPD) by utilizing assistance from more capable others (Lantolf & Poehner, 2004). This study combined DA and VLS to enhance academic vocabulary knowledge of Thai low-proficiency university students by employing mixed-method research with an emphasis being placed on qualitative methodology. Intensive tutorials were conducted with five second-year students purposively recruited from their academic and general vocabulary scores. The research instruments included four DA tasks, mediation stages, academic words of four main word classes, recordings of DA sessions, verbal reports, field notes, students' diaries, a pretest, an immediate posttest, and a delayed

posttest. The findings from two DA tasks (the part of speech strategy and the use of a new word to form a sentence strategy) revealed that the participants understood word meaning but not grammatical functions. Their use of VLS was fair, and inappropriate strategies were also found. Teaching background of syntax, longer intervention, and adjustment of the task designs were suggested to further assist students in their vocabulary acquisition using DA and VLS.

Keywords: dynamic assessment, vocabulary learning strategies, academic vocabulary, EFL, low-proficiency students

Introduction

It is undeniable that vocabulary is essential for foreign language learners to learn another language and communicate (Milton, 2009), and every stage of language learning requires a considerable amount of vocabulary (Laufer, 2001). However, Siyanova-Chanturia and Webb (2016) found that learners in many EFL contexts may not even know the highest frequency, or the first 1,000 words. University students also need to know academic vocabulary to successfully learn academic English (Phoocharoensil, 2015), especially academic vocabulary used in reading that will lead to incidental language learning (Pecorari et al., 2019). Nonetheless, learning academic vocabulary is much more challenging than learning general vocabulary because academic vocabulary is particular to academia and sometimes conveys abstract meaning (Sibold, 2011).

Vocabulary learning strategies (VLS) can help students learn words independently and expand their word knowledge (Nation, 2001). Most research on VLS used the survey method to determine students' employed strategies. Gu (2020) has suggested examining the dynamic nature of strategic learning while students are doing research tasks rather than using a survey method or tally approach. Using a formative assessment to determine the effects of VLS on vocabulary learning can diagnose learning and provide differentiated instruction, so students will improve the use of VLS and learn vocabulary effectively (Gu, 2017).

Dynamic assessment (DA) is known as an alternative assessment that seamlessly blends assessment and instruction to mediate students to their zone of proximal development (ZPD) with assistance from an expert, a teacher, or a more capable peer. Such assistance conveyed through dialogue between the mediator/teacher and students is graduated from implicit to explicit mediation, and is attuned to students' needs (Dörfler et al., 2009;

Lantolf & Poehner, 2004). During the mediation, the mediator diagnoses students' underlying problems and gradually resolves them based on their responsiveness (Dörfler et al., 2009). DA aims to move the students from other-regulation by the teacher to self-regulation by students themselves, so they can control their language use (Lantolf & Poehner, 2010).

Recent research studies that employed DA with vocabulary suffered from a series of limitations. They mainly emphasized quantitative results between the experimental and control groups in pre- and post-test scores such as those undertaken by Hamavandi et al. (2017), Mirzaei et al. (2017), and Ebadi et al. (2018). These studies did not provide (or minimally provided) qualitative data to explain how students' learning developed for the claimed improvement. Little research was conducted with beginners or low-proficiency students of English, although DA could also be employed in special education and for struggling students in mainstream classrooms (Poehner, 2014). Jang (2014) has recommended future research on DA to examine students' cognitive processes and the role of mediation such as prompts and feedback to illustrate their development. Research should accumulate rich qualitative data on diverse states of knowledge and conceptual errors elicited from tasks as well as analyses of students' cognitive processes and strategies. Finally, the scarcity of literature on group dynamic assessment (GDA) calls for more research to investigate how much individuals benefit from the group (Poehner, 2014).

The present study aimed at investigating the effects of DA on English academic vocabulary learning of a group of Thai low-proficiency university students by combining DA and vocabulary learning strategies (VLS) into a model and inducing the students to use VLS to learn academic vocabulary through DA tasks that were administered with different mediation stages.

The research question was established as follows: "What are the effects of the dynamic assessment model on low-proficiency students' English academic vocabulary knowledge?"

It is worth noting that this research attempted to overcome previous limitations by conducting an active examination of vocabulary learning strategies, gathering rich qualitative data on how DA assisted vocabulary learning, measuring the gain from GDA on the individual level, and applying DA to help low-proficiency students who were likely in pressing need of assistance.

Literature Review

Dynamic Assessment

Dynamic assessment (DA) rises from Vygotsky's Socio-Cultural Theory (SCT) advocating that learning occurs from social interactions or activities in which assistance moves from more to less capable individuals including learning that occurs in the Zone of Actual Development (ZAD) and the Zone of Proximal Development (ZPD) (Dörfler et al., 2009). DA aims to move the less capable individuals to ZPD by systematically changing the assistance offered by the more capable individuals from implicit to explicit as controlled by students' responsiveness to the mediation (Aljaafreh & Lantolf, 1994; Lantolf & Poehner, 2010). The purpose of graduated mediation (ranging from implicit to explicit) is to let students stretch their knowledge by themselves before the more explicit mediation is given (Infante & Poehner, 2019). This practice follows the goal of DA to promote self-regulation (Herazo et al., 2019).

Poehner and Lantolf (2005) have differentiated DA from an informal formative assessment that used unpredictable conversation because of its systematic and theory-based nature. However, Miller (2011) has pointed out that the mediation in DA is a metacognitive mediation to help students utilize concepts. According to Davin (2016), the concept and the way to use linguistic resources must be taught first and then DA can be used to internalize them.

DA can be conducted in different ways. A human mediator can do it with an individual or a group of students, and a computer mediator can serve many students individually. There are two approaches to DA: interactionist and interventionist. Interactionist DA employed flexible dialogic mediation which can be adjusted to students' needs; nonetheless, careful planning to escalate the mediation along the implicit-explicit continuum is still needed. Interactionist DA is more suitable for creating qualitative profiles of each student's development than comparing each student numerically. It allows the mediator to adjust the assistance easily and is more sensitive to the student's ZPD. However, the drawback of interactionist DA is that it is time- and energy-consuming. Interventionist DA favors scripted and standardized mediation. The teacher can assign weighted scores to each prompt and calculate the mediated scores to compare students' learning abilities quantitatively. The interventionist approach suits large-scale testing, but the

standardized mediation is less responsive to students' needs (Lantolf & Poehner, 2004).

Regarding group dynamic assessment (GDA), Poehner (2009) has explained that mediation expands to a group or a whole class. The GDA practice can be conducted in two ways: concurrently and cumulatively. In concurrent GDA, there are no fixed mediation turns of who will answer first. The teacher can freely interact with all students and let them help each other find the answers. In cumulative GDA, the teacher interacts with each student one by one until all the cognitive problems are solved. The other students are expected to be active observers until their turns to answer arrive.

Table 1

Constructs of Vocabulary Knowledge (Nation, p. 27)

Area	Construct	Skill	Guiding Questions
Form	Spoken	R	What does the word sound like?
		P	How is the word pronounced?
	Written	R	What does the word look like?
		P	How is the word written and spelled?
	Word parts	R	What parts are recognizable in this word?
		P	What word parts are needed to express the meaning?
Meaning	Form and meaning	R	What meaning does this word form signal?
		P	What word form can be used to express this meaning?
	Concept and referents	R	What is included in the concept?
		P	What items can the concept refer to?
	Associations	R	What other words does this make us think of?
		P	What other words could we use instead of this one?
Use	Grammatical functions	R	In what patterns does the word occur?
		P	In what patterns must we use this word?
	Collocations	R	What words or types of words occur with this one?
		P	What words or types of words must we use with this one?
	Constraints on use (register, frequency…)	R	Where, when, and how often would we expect to meet this word?
		P	Where, when, and how often can we use this word?

Academic Vocabulary

Vocabulary Knowledge

Vocabulary knowledge has been defined by several scholars in terms of the elements required in knowing words. Nation (2011) conceptualizes vocabulary knowledge into nine constructs as displayed in Table 1. R refers to the receptive skill, and P refers to the productive skill.

Academic vocabulary generally appears in various kinds of academic texts and covers around 9% of the running words in a text (Nation, 2001). Several academic word lists have been created recently. The present research selected Gardner and Davies' (2014) AVL because it was not an addition to any general word lists; in other words, it did not assume that learners have already known the general high-frequency words. Thus, the words were derived from frequently occurring words in academic texts from an enormous corpus of 120 million words. Also, it used lemmas (words from the same part of speech and linked by inflectional suffixes only) to form an academic vocabulary list that avoids the meaning-distance problems of word families. Therefore, it was believed to suit beginners and intermediate learners, as suggested by Gardner and Davies (2014).

Part of Speech Strategy

Knowing the part of speech of a word promotes both receptive and productive word learning because it helps students recognize and use words according to grammatical structures (Nation, 2011; Schmitt, 2000). Among various kinds of word classes, most language research has focused on four main parts of speech: nouns, verbs, adjectives, and adverbs (Schmitt, 2000). They are content words and carry most text information (Thornbury, 2002) and are used to test vocabulary knowledge (Read, 2000).

In addition, collocations are better taught and learned through the grammatical structure of part of speech rather than relying on memorization knowledge (Palmer, 1933, as cited in Barnbrook, Mason, & Krishnamurthy, 2013). Siyanova-Chanturia (2015) mentions that collocations cover as much as 50 percent of English spoken and written discourse. Therefore, knowing collocations enables students to learn authentic language. Regarding the types of collocations, Ackermann and Chen (2013) have categorized academic collocation into four major types including adjective-noun, verb-noun, adverb-adjective, and adverb-past participle, respectively. Siyanova-Chanturi (2015) found that teaching Chinese beginners to use noun-adjective Italian

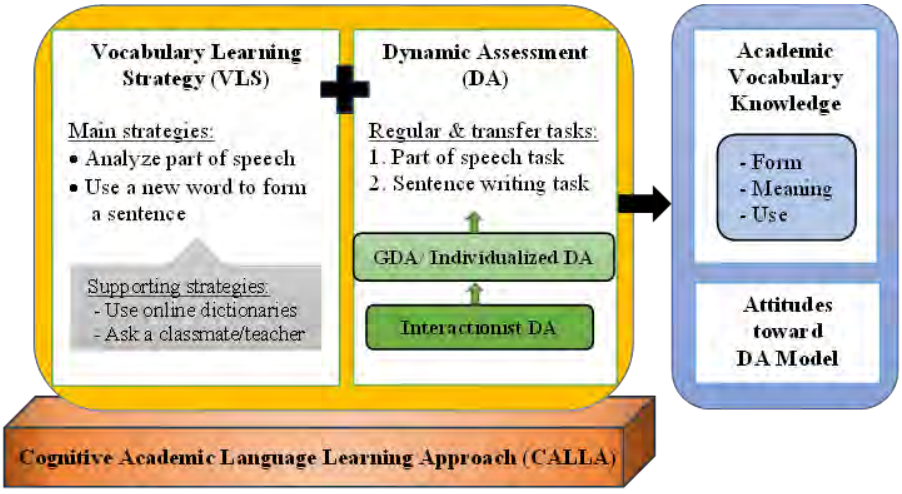
collocation during a five-month composition course was successful, while Webb and Kagimoto (2009) promoted explicit teaching of collocations which proved effective in short instruction time. In this study, the part of speech strategy was incorporated to support the students to learn academic collocations formed by different speech parts.

Using a New Word to Form a Sentence Strategy

Using a new word to form a sentence is one of Schmitt's (1997) vocabulary learning strategies. The approach helps consolidate the words that students have encountered and contributes to productive word learning because students must write a sentence by using the new word's meaning, part of speech, and perhaps collocations and registers (Schmitt, 1997).

Figure 1

Research Conceptual Framework



The involvement load hypothesis of Laufer and Hulstijn (2001) is generally referred to in research investigating the effects of writing a sentence by incorporating a new word on vocabulary learning. The hypothesis asserts that the more the task induces high students' involvement, the more the students should remember the words. The involvement consists of three dimensions: need, search, and evaluation. A sentence writing task that requires use of the target word and creation of the context is considered to have a strong evaluation. Zou (2017) has affirmed the involvement demanded from writing a sentence because students must remember and combine

elements and plan what to write before writing. Park (2018) conducted research with high- and low-proficiency Korean high school students and found that the sentence writing task promoted word learning better than the gap-filling task. Likewise, Zou (2017) found that the sentence writing task and the composition task improved vocabulary knowledge of intermediate students better than cloze, or fill-in-the-blank, exercises. However, the results from a study carried out by Stubbe and Nakashima (2017) showed that some written sentences of the high-beginner Japanese freshmen did not portray the students' vocabulary understanding.

Methodology

Research Design

The study employed a mixed-methods research design with an emphasis on the qualitative method. The intervention was the main source of qualitative data for the assessment and learning, whereas the pretest, immediate posttest, and delayed posttest provided quantitative data. The intervention followed the research conceptual framework in Figure 1 where vocabulary strategies were combined with dynamic assessment tasks, which were based on Cognitive Academic Language Learning Approach (CALLA) as an instructional framework (Chamot, 2007). All of them formed the DA model to enhance academic vocabulary knowledge whose constructs were defined by Nation (2011). Group dynamic assessment (GDA) was the main intervention, while the individualized dynamic assessment was implemented to determine how much learning each student participant gained from GDA.

Participants

Five beginners were selected from a group of second-year students who retook the first basic English foundation course and passed it at the end of their first year; that is, in the summer semester of the academic year 2021. All were native Thais whose ages were between 18 and 19 years old and were from three different faculties. Two screening instruments were employed to recruit them: 1) an adapted version of the Academic Vocabulary Test (AVT) of Pecorari et al. (2019) for academic vocabulary and 2) The New Vocabulary Level Test (NVLT) of Webb, Sasao, and Balance (2017) for general vocabulary. The students who received low academic scores based on the group's mean were selected. As for the NVLT, receiving 86% of the level's total score indicated mastery of each level, so the students who had not mastered the second level were selected because Milton (2009) said that knowing around 2,000 and 2,500 words moves students from beginner to

intermediate levels. The scores of the five participants were shown in Table 2. The names used are pseudonyms.

Table 2

The Participants' Vocabulary Scores in the Screening Instruments

Test	Test Criteria	Participant				
		Koko	**Pukpik**	**Jee**	**Smile**	**Ging**
AVT (30)	Mean (12.38) SD (3.34)	6	6	11	13	14
NVLT Level 1	86%	40%	60%	90%	93.33%	86.66%
	(26/30)	12	18	27	28	26
NVLT Level 2	86%	23.33%	33.33%	60%	80%	40%
	(26/30)	7	10	18	24	12

Research Instruments

The research instruments included DA tasks and mediation stages, which are described as follows.

Dynamic Assessment Tasks

The dynamic assessment tasks included the part of speech task and the sentence writing task. Each task consisted of two group dynamic assessment (GDA) sessions: one for the regular task and the other for the transfer task. The regular task required participants to internalize the concept, and the transfer task traced how much they could apply the concept in a more challenging context. After the GDA was implemented, there was an individualized DA session where the participants worked on a few items that had the same format as that of both the regular and transfer tasks.

The part of speech task and sentence writing tasks can be described as follows. The part of speech task demanded the participants to analyze the part of speech to learn academic words through collocations which were categorized into four types: adjective-noun, verb-noun, adverb-adjective, and adverb-past participle. The node words were academic words from four parts of speech: noun, verb, adjective, and adverb, and their collocates were either academic or general words. The regular task consisted of seven items. They were in the form of a cloze task that provided the contextual sentences and two blanks to put in the collocation in each sentence. There were two groups of choices, and the group containing the target academic words was in bold.

The participants had to choose one word from each group to form a collocation and write down the collocation type such as adjective-noun. Specifically, the regular task had letters A and B to guide the collocation order. In addition, the transfer task consisted of seven items, but the collocation order was not guided by letters A and B, so it required more cognitive load (See Appendix A). The part of speech task assessed two constructs: the receptive form and meaning (meaning) and the receptive grammatical functions (use) according to Nation's (2011) constructs of vocabulary knowledge.

The sentence writing task required participants to employ the new word to form a sentence so that they learned the academic words through writing. The target words were in four parts of speech: noun, verb, adjective, and adverb. The participants could use a dictionary to search for other words to write with the target words, but use of translation websites and applications was prohibited. Because writing a sentence was challenging for low-proficiency students, the participants were allowed to write in a pair, but one participant wrote alone because of the odd number of five participants. The regular task consisted of five items, each of which was equipped with a Thai meaning, an English definition, two example sentences, and their guiding grammatical pattern. All the information provided was to assist the participants in understanding the word before they used it to write. The transfer task also consisted of five items and provided the aforementioned information except for the two example sentences (See Appendix B). According to Nation's (2011) constructs of vocabulary knowledge, the sentence writing task assessed three constructs: the concept and referent (meaning), the grammatical functions (use), and the collocations (use), all of which referred to productive word learning.

The academic words were selected from Gardner and Davies' (2014) Academic Vocabulary List (AVL) because of its sound methodology. The vocabulary was also the source of the Academic Vocabulary Test (AVT) by Pecorari et al. (2019) from which the adapted version (which was one of the screening instruments) was built. Although the list contains 3,015 words, the words from the 1-500 and the 501-1000 frequency bands were selected because they provide the first and second highest mean frequencies while the mean frequencies of the other bands reduce sharply. The selected academic words equally included words from four classes: nouns, verbs, adjectives, and adverbs. The words were not the same as previously used in the participants' coursebooks of their two English foundation courses to avoid the memory effect.

Mediation Stage

During the tasks, mediation prompts were given to enable the participants to employ the part of speech strategy and the use of a new word to form a sentence strategy to learn academic words. The prompts were given from implicit to explicit stages because effective mediation for interactionist DA should be graduated, dialogic, and contingent on the students' need (Aljaafreh & Lantolf, 1994). The mediation stages of the part of speech task and the sentence writing task followed Davin, Herazo, and Sagre's (2017) organization of mediation to correct the error and agreed with Aljaafreh and Lantolf's (1994) mediation for student writing. However, the mediation for the sentence writing task occurred after the participants finished writing their sentences and reviewed the sentences with the mediator and the other group members. The mediation at the revision stage agreed with Poehner et al. (2018) and Mirzaei et al. (2017) (See Appendices A and B).

Data Collection

The intervention was designed to be intensive tutorials and was carried out in the first semester of the academic year 2022 in the evening out of the student participants' regular class time. After the participants took the pretest in the first week, they studied four DA tasks, each task per week, which covered the second to fifth weeks. The part of speech task was administered in the third week, and the sentence writing task the fifth week. In each week, two group dynamic assessment (GDA) sessions were conducted on separate days. After that, each participant took individualized DA with the researcher within the same week. In the sixth week after all the DA interventions were completed, the participants did the immediate posttest, answered the attitude questionnaire, and sat in the semi-structured interview. Then, the participants did the delayed posttest in the eighth week, with a two-week interval between the two posttests following Haynie's (2003) suggestion on the appropriate time to administer delayed retention tests.

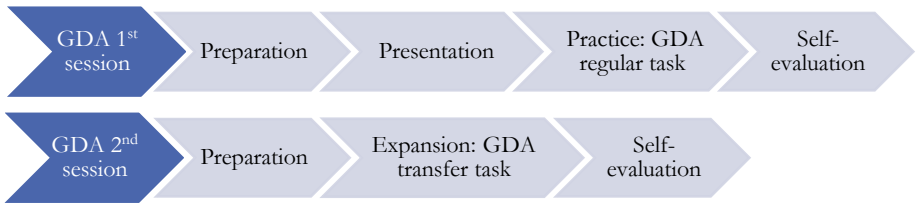
Data Collection Procedure

When administering GDA sessions each week, the researcher followed the Cognitive Academic Language Learning Approach (CALLA) as an instructional framework. It consisted of five stages: preparation,

presentation, practice, self-evaluation, and expansion which appeared in cycles and recurred in a flexible sequence (Chamot, 2007). The approach has been widely adapted for teaching language-learning strategies in ESL and EFL contexts (Gu, 2018). Figure 2 illustrates the stages in conducting the weekly GDA sessions.

Figure 2

Stages in Conducting GDA for Each Task



The first GDA session covered four stages starting with the preparation stage where the researcher examined the students' familiarity with the strategy. Next, a presentation stage taught necessary linguistic knowledge and modeled strategy use so that the participants would have enough background knowledge to perform the task. A practice stage followed for the mediator (researcher) and the participants to do the regular task together. The first GDA session concluded with a self-evaluation stage for the participants to write diaries to record the encountered academic vocabulary and reflect on their learning.

The second GDA session included preparation, expansion, and self-evaluation. In the preparation stage, the researcher activated the participants' knowledge and use of the strategy from the first session. The expansion stage required participants to apply the strategy to a new context (Chamot, 2007) in which the mediator and the participants did the transfer task together. The session concluded with the participants writing self-evaluation diaries.

The individualized DA did not have these recursive stages. It contained a few extra items to assess individual learning gain, but the participants still wrote diaries as usual.

Data Collection Instruments

The data collection instruments to collect qualitative data were recordings of DA sessions, verbal reports, the researcher's field notes, and

students' diaries. It must be noted that the verbal report was in the form of self-observation in which directed questioning was used without a stimulus (Ward et al., 2020), to facilitate the conversation flow of the task. Quantitative data were collected through the pretest, immediate posttest, and delayed posttest. The test format resembled the task format, but the tested words were not the exact words taught in the part of speech task and the sentence writing task to avoid mere memorization. They were from the other tasks of the intervention.

Data Analysis

Raw scores were used to analyze quantitative data due to the small number of participants. Thematic analysis was employed to analyze the qualitative data. Most qualitative data were from recorded conversations. The total recordings of all the GDA and individualized DA sessions amounted to 8.07 hours. The recordings were divided into 4.27 hours of the part of the speech task and 3.40 hours of the sentence writing task. The recordings contained both Thai and English, but Thai was mainly used to explain everything to the participants to ensure understanding due to their limited English proficiency. The researcher did the translation verbatim manually and included both linguistic and extra-linguistic features including pauses, laughter, repetition of words, and non-verbal language. At first, the researcher tried using a few pieces of AI software, but the recordings contained many long pauses and too softly spoken speech from the participants that the software automatically stopped transcribing many times. Moreover, the software allowed setting only one language as a default for transcribing, so the recordings, which contained both languages, did not match its operational system.

Thematic analysis was chosen because it promoted flexible data coding without prefabricated coding frames (Braun & Clarke, 2006), so it allowed the researcher to interpret the data as they truly emerged. To do so, the researchers read the transcriptions many times, set the initial codes following the mediation stages, and expanded to the codes of the mediators' other forms of assistance, the participants' problems in learning, their solutions, and the soundness of their reasoning behind their answers.

Results

The quantitative data from the tests and qualitative data from the part of speech task and the sentence writing task are reported respectively.

The Effects of the DA Model on the Part of Speech Task

The test scores of the part of speech section in the pretest, immediate posttest, and delayed posttest revealed that the immediate posttest scores were generally higher than the pretest scores. The delayed posttest scores displayed a decrease, increase, and steadiness when compared to the immediate posttest scores. Most scores were quite low compared to the total scores as shown in Table 3.

Table 3

Pretest, Immediate Posttest, and Delayed Posttest of the Part of Speech Section

Test/Participant	Jee	Smile	Pukpik	Leejen	Koko	Total Score
Pretest	3	2	3	1	1	8
Immediate Posttest	7	3	3	2	2	8
Delayed Posttest	4	2	3	4	2	8

The analysis of qualitative data during the DA tasks gave details of their performance. In the regular task, the participants did not initiate any discussion or answer anything. The mediator had to help them read the contextual sentences and let them search for the word meaning in a dictionary. Moreover, the participants admitted that they did not know the part of speech of the choices. To prevent them from randomizing the answer and using a test-taking strategy by crossing out the wrong choices, they were allowed to look up the part of speech. Consequently, they selected correct answers in five out of seven items in the first time. When they answered wrongly, giving only the mediation stage 2 (existence of error) and the mediation stage 3 (location of error) was sufficient for them to choose the correct answer. In the transfer task, the mediator still helped the participants read the contextual sentence and allowed them to look up the meaning of the word. Unexpectedly, they needed help in choosing a meaning of a word from available meanings and parts of speech shown in a dictionary because they

were unfamiliar with using it given that they normally used a translation tool where only the meaning of a word, and usually one, was readily provided. Upon determining the part of speech of the choices, they were asked to use the knowledge of suffixes that they had learned in the morphology task prior to the part of speech task and use a dictionary for only the base of each choice group. Furthermore, when the collocation order was not guided in the transfer task, the participants took 22 minutes longer and answered only two out of seven items correctly in the first time. The verbal report of both regular and transfer tasks revealed that the collocation meaning and collocation type helped them answer, but almost nothing about the sentence structure was mentioned. Mediation stage 2 was used the most, while those of stages 3, 4, and 5 were slightly employed. Excerpt 1 shows an example of their performance in a transfer task. The excerpt was translated from Thai to English because the mediator mainly used Thai to interact with the low-proficiency participants.

Excerpt 1: GDA - Transfer Task (Part of Speech Task)
Item 4. There continues to be many children who _____ _____ when learning to read.

difficult, difficulty, difficultly	encounter, encountering, encounters

13. M:	"encounter" - do you know this word? If not, you can search for its meaning.
14. Smile:	*(searches the meaning)* It means competition or face.
15. M:	"face" - what part of speech is it?
16. Smile:	It's a noun.
17. M:	Can it be something else?
18. Leejen:	It is a verb.
19. M:	It can be a verb. Now you can choose the collocation.
20. Ss:	*(1.35 minutes of silence: search with mobile phones, open the class materials)*
21. M:	Do you have any answers in mind now?
22. Ss:	*(28 seconds of silence)*
23. M:	There continues to be many children *dot dot dot* when they learn to read.
24. Ss:	*(23 seconds of silence)*
25. Pukpik:	Is 1st word "encountering"?

26. M:	No, not "encountering" *(mediation stage 2)*
27. Leejen:	Does the 1st word have "di"? *(points at a group of difficult)*
28. M:	No *(mediation stage 2)*
29. Koko:	"en-coun-tes?" *(says encounters but mispronounces)* 3rd choice – starts with "en"?
30. M:	"encounters" *(recasts with correct pronunciation)* – where to put it?'
31. Koko:	1st word'
32. M:	1st word – no' *(mediation stage 2)*
33. Leejen:	"encountering" for 2nd word?'
34. M:	No *(mediation stage 2)*
35. Koko:	"dif-friend-ly" *(says difficultly but mispronounced the word)*
36. M:	"difficulty" or "difficultly"?
37. Koko:	"difficultly" – 1st choice with l-y
38. M:	No *(mediation stage 2)*
39. Ss:	*(38 seconds of silence)*
40. M:	I'd like to guide you a little bit. Look at "who." Look at this clause *(highlights the clause: who _____ _____)* What kind of word should follow "who"? What word class follows "who"? *(mediation stage 4)*
41. Leejen:	Is 1st word "encounters" with "s" ending?
42. M:	What is "encounter" with "s" ending, Leejen? What part of speech is "encounter" with "s"?'
43. Leejen:	to put as 1st word in the blank
44. M:	What part of speech is it?
45. Leejen:	verb
46. M:	Leejen chose a verb correctly, but this verb must not have "s". *(mediation stage 5)*
47. Pukpik:	only "encounter"
48. M:	Yes, I will explain later why it must not have "s" because "who" modifies "children"' Do children mean one child or many children?
49. Ss:	many

50. M:	many – the verb must not have "s"' We get the verb, OK.
51. Leejen:	2nd word is 2nd choice with "d"? *(chooses difficulty)*
52. M:	2nd choice? "difficulty" Yes, it is.
53. M:	Why did you choose "difficulty"?
54. Leejen:	It is a noun.

As can be seen, the participants struggled to choose the right word from the second group choice. Two participants, Leejen and Koko, in turns 33 and 37, even displaced the position of the node and the collocate. However, Leejen later chose the verb "encounters" which did not agree with a plural noun "children." Furthermore, it was found out later that they did not understand the complex sentence with the relative pronoun "who," so the mediator explained it to them.

The individualized DA exposed different learning gains from GDA. Jee who scored the highest in the static tests did the task the best and could give a correct answer such as the article "the" was used before a noun. The others employed inappropriate strategies and had no valid linguistic reason to support their selection. To illustrate, Pukpik cut the choices that could not form any of the four collocation types without knowing the collocation meaning or sentence structure, while Leejen had a misconception that the first word must have a shorter orthography than the second word. In addition, Smile and Koko compared the sentences with the examples in the class material and focused on words that existed in both sources such as "the," "is," and "are." For instance, Smile chose the correct collocation "vital information" for the sentence "this book provides all the (A)_____ (B)_____ you need to know about the disease" by referring to the example "this is the final(adj) step(n) of the application process" because both sentences had the word "the." Koko also answered correctly without knowing the sentence structure. He thought that "vital" modified "provides." When he knew his reasoning was wrong, he thought that "information" modified "provides."

Table 4

Pretest, Immediate Posttest, and Delayed Posttest Scores of the Sentence Writing Section

Test/Participant	Jee	Smile	Pukpik	Leejen	Koko	Total Score
Pretest	5	6	2	1	2	8

Immediate Posttest	8	6	5	5	4	8
Delayed Posttest	5	5	3	2	3	8

The Effects of the DA Model on the Sentence Writing Task

The test scores of the sentence writing section in the pretest, immediate posttest, and delayed posttest exhibited that the participants scored higher in the immediate posttest, but the scores dropped in the delayed posttest as displayed in Table 4. The scores in this section were derived from a scoring rubric (See Appendix C).

The qualitative data elicited during the DA tasks illustrated the participants' detailed performance. Despite the difference in the task format between the regular task and the transfer task, their performances were rather similar. In other words, the absence of the sample sentences seemed not to affect their sentence writing. Most of the participants were able to write a sentence that presented the target word's meaning correctly, except when one participant misunderstood the word's meaning because he relied on only the Thai meaning and skipped the English definition. In contrast, they generally could not use the target word's grammatical functions correctly, especially the adjective, adverb, and verb. Likewise, the other words used with the target word generally were grammatical which sometimes obscured their understanding. Therefore, most of the mediations were aimed at correcting grammatical errors. Because there were many things to fix, the proposed ideas from each participant varied and went in a nonlinear way when the mediation stages moved from implicit to explicit mediation. Still, their answers were summarized to reflect their ability. At a very basic level, they could add the conjunction "and," change the preposition "at" to "about," change "y" to "ies" to form a plural noun, and correct misspellings. For basic grammar, they could change the verb "have" to "has" for an uncountable noun, change the verb "has" to "is" to put before an adjective, and delete a redundant verb. When they received explicit mediation stage 5 (explanation of how to correct the error), they could add a missing verb, add a morpheme "s" to a verb in the present simple tense, and find an adjective to replace a verb. However, it is worth noting that they were unable to fix verb tenses, the passive voice, adjectives and adverbs, and reformulating the whole sentence. Therefore, the mediation stage 6 (provision of correct form/sentence structure and its explanation) was provided. An example of a participant's sentence is shown in Excerpt 2.

Excerpt 2: GDA - Transfer Task (Sentence Writing Task)

Item 3. simultaneously (adv) = โดยเกิดขึ้นพร้อมกัน, ในเวลาเดียวกัน
= happening or being done at exactly the same time
Guiding grammatical pattern: S + V + Object/Complement
Adv before V, or Adv after V
Your sentence: _____
A participant's sentence: You and me simultaneously birth time.
Mediated sentence: You and me were simultaneously born.

1. M:	I will let your friends tell their understanding of this sentence.
2. Pukpik:	You and me were born at the same time.
3. M:	*(laughs)* Everyone does their best to understand every sentence. How will we change it? How do we tell our birth? *(mediation stage 4)* Smile, when were you born?
4. Smile:	May 18
5. M:	Smile can say "I was born on May 18". The mother made us born. So, we were born. It is a passive voice. Now, let's fix the sentence. *(mediation stage 5)*
7. Smile:	Change "birth" to "was"
8. M:	Change "birth" to "born" and delete "time" What verb is for the subject "you and me" *(Writes "you and me _____ simultaneously born" to guide the missing verb) (mediation stage 5)*
10. Koko:	"with"
11. Pukpik:	"we"
12. M:	Do we use "was" or "were" for a plural noun? *(mediation stage 5)*
13. Jee:	"were"

Based on the aforementioned excerpt, it could be seen that the original ill-formed sentence was understood among them, and the target word "simultaneously" conveyed its meaning. Nevertheless, its grammatical function and collocation or other words/types of words accompanying it were incorrect. Clearly, the participants did not know the structure of the passive voice; therefore, they could not solve the sentence and the mediation stage 4 (nature of the error) was ineffective. Moreover, with the weak knowledge of grammar, the mediation stage 5 (explanation of how to correct the error) did not help Koko and Pukpik either, but Jee understood it.

Although the mediator had directly explained the passive voice structure to them in the part of speech task and the regular task of the sentence writing task, that seemed insufficient to make it internalized.

The individualized DA displayed similar results as those of the GDA in that the participants generally understood the target word's meaning, but they did not read the English definition. They still had tremendous problems with syntax especially when using an adjective. The explicit mediation of stage 5 (explanation of how to correct the error) and stage 6 (provision of the correct form and sentence structure) were extensively employed because the participants rarely knew how to correct the errors and were confused about the grammar. The findings also revealed that each group member appropriated the learning from GDA unequally. Only Jee, whose English ability was the highest, could make both of her sentences communicable while the other participants, Smile, Pukpik, and Leejen could make only one and Koko could not make any. Further investigation revealed that Jee could correct her errors with the least guidance despite her unsettled knowledge of the sentence structures. The other participants needed considerable help and explanation. Smile was confused about the verbs between "be" and "do" and the usage of "do" and "does," nor did she know the present, past, and past participle forms of other verbs. Simply put, graduated mediation could not be applied with her because she had so much grammar confusion that her ideas for correction became illogical guesses. Furthermore, Pukpik did not know the position of an adjective in a sentence and verb tenses. The mediator needed to use the class material and dictionary and provide the correct verb form to help. Also, Leejen needed help with the basics of the verb "is, am, and are" to agree with a pronoun in her sentences and needed help in every step of reformulating a sentence, while Koko's writing was worrisome because he only searched English words and combined them without thinking of the sentence structure, and this resulted in unintelligible sentences including "*he is idea there outdoor exert on consistents" and "*government being campaign use bagger for plastic minimize follow SDGs." Correcting his sentences equaled reformulating them which required the mediator to explain every point because he was very much confused about grammar; for example, he thought that the word "that" was a verb. In conclusion, grammar and syntax might be too far from their zone of proximal development (ZPD) due to the limited knowledge they actually had.

Discussion

The results of the present study demonstrated that the dynamic assessment model had minimal positive effects on the enhancement of low-proficiency students' academic vocabulary knowledge. The immediate posttest and delayed posttest scores of the part of speech section showed slight improvement after the intervention, although the test format guided the collocation order. Thus, the results suggested that the participants needed more practice in reading at a sentence level, recognizing parts of speech, and suffixes. Their performance while doing the group dynamic assessment (GDA) and individualized DA possibly explained the relatively low scores. The participants could not read a sentence independently, and some needed the mediator's help in reading every word. One reason was they did not know the vocabulary. Another important reason was weak syntactical knowledge as they did not know the parts of speech of words and could not analyze the sentence structures although they could recite a basic sentence structure of S+V+O: a subject, a verb, and an object. Moreover, despite studying the morphology task before the part of speech task, the participants may not have internalized the suffixes because the intervention of such a task lasted only a week.

Based on the existing literature, syntax is considered the depth of vocabulary knowledge that tells characteristics of words such as morphemes, semantics, and collocation (Jiang, 2004), not the breadth or meaning. It was possible that syntax was too complex for low-proficiency students in the present study who needed more time and practice to understand it. The properties of some word classes might be challenging for their understanding especially the verb because it has several forms. Peters (2020) has explained that verbs change their forms due to tense, person (first, second, and third person), and number (singular and plural). They are relational and contain exceptions, so they are less concrete than nouns. Understanding contextual clues and syntagmatic relationships helps students understand the verb's meaning. Likewise, adjectives also have different forms, and their meanings are relational and specific to the nouns they modify. Therefore, low-proficiency students with limited cognitive processing and weak grammatical knowledge such as those participating in the present study could have difficulty recognizing the forms and analyzing the grammatical functions and meaning alone in the static tests and even when mediation was provided during the DA task.

During the GDA of both regular and transfer tasks of the part of speech task, the fact that the participants took only the implicit mediation telling the existence of error during GDA and arrived at the correct answers could have made the mediator misunderstand that they understood the collocations and their grammatical functions in relation to the sentence structure. However, it was later found in individualized DA tasks that the participants merely matched the collocations according to the four collocation types taught but did not understand their grammatical functions that suited the sentence structure. The findings agreed with Davin (2016) that the records of the prompts used could not guarantee that the students would understand the language and could become self-regulated. In Davin's (2016) study, a microanalysis of a 5th-grade student revealed that he could form a specific Spanish question following a slot-filler syntactic template without taking prompts but could not form other questions further than that. In the present study, the GDA showed that the participants could match the collocations without mediation or with only implicit mediation, but the individualized DA revealed that most of them could not provide reasons about the sentence structure. Moreover, the fact that less mediation could give a false impression of the group's learning gain contrasted with the findings reported by Bakhoda and Shabani (2019). In their study, the human mediator in interactionist concurrent GDA guided a group of intermediate students aged 19 to 24 who were studying reading through computerized GDA. When the group answered wrongly, the mediator asked them to state their reasoning and choose another answer. The fact that the group relied on fewer computerized prompts in subsequent reading texts led the researcher to conclude that the group's ZPD had grown. As such, the findings of the present study provided contrastive evidence that may contribute to the literature on GDA.

The individualized DA of the part of speech task also unearthed unequal learning gain from the GDA. The individualized DA showed that Jee, who seemed to have the highest English proficiency, did the task the best with decent understanding, while the others' improper strategies were exposed. Moreover, this study found a participant, Leejen, who seemed to have not internalized the concept of forming collocations from the GDA because she paired words from short and long orthography. This less responsiveness to DA mediation also appeared in Davin (2016) where two students required more mediation than typically offered in classroom DA and small-group work, which suggested that different forms of assistance may be needed. Furthermore, an unexpected and inappropriate strategy was found in two participants, Smile and Koko, who merely compared the task sentence and an example sentence in the class material to look for similar words that appeared before the collocations. This evidence may give a critical warning

on the amount of assistance provided to the participants in terms of materials. The availability of the class materials when the participants did the task might have given them too much assistance that prevented them from stretching their knowledge. This was incongruent with the DA principle that assistance was given contingently when students started to struggle (Infante & Poehner, 2019). In summary, their performance during the DA tasks demonstrated that the participants tended to achieve the form and meaning construct but not the grammatical function construct. Their understanding seemed to apply only to the word level but not the sentence structure level. Furthermore, different individuals' ZPDs and levels of responsiveness existed although the group's ZPD was seen as a whole representation of development. The findings may fulfill the scarce literature about learning gain from GDA proposed by Poehner (2014), and the literature about different individual vocabulary learning despite the seemingly predictable group behavior as suggested by Milton (2009).

Regarding the test scores of the sentence writing section, the immediate posttest and delayed posttest scores displayed minimal improvement even though the test format provided guiding grammatical patterns including the positions of an adjective and adverb. The qualitative data during the sentence writing task helped explain the participants' performance. The participants could mostly apply the meaning of the target academic words in the sentences but sometimes could not use their grammatical functions correctly. Furthermore, they generally could not use other words or types of words with the academic words accurately which often resulted in grammatically incorrect sentences. Based on the constructs of the sentence writing task taken from Nation's (2011) constructs of vocabulary knowledge of form, meaning, and use areas, it could be stated that the participants achieved the concept and referent construct (meaning), but not the grammatical function construct (use) and the collocation construct (use), all of which referred to productive word learning. There were multiple possible explanations for why understanding meaning could be more easily achieved. According to Jiang's (2004) explanation of vocabulary acquisition, the first registration of a new word is about the word's meaning. Furthermore, adult students depend on L1 to understand L2 words (Jiang, 2004; Nation, 2011); thus, it was not surprising that the participants in this study, who were adult learners could understand and use the academic words' meaning in sentences despite their low proficiency. However, there was an occasion when a participant did not truly understand an academic word "incorporate" because he used only a Thai meaning but not an English definition. Due to the equivalent hypothesis, the matching between the L1 Thai meaning and the L2 academic word might have failed because they were not exact equivalents, which led to the misunderstanding of the L2 semantic properties

(Swan, 2001). In such a case, Jiang (2004) has pointed out that students must reconstruct the L1 meaning and develop the concept specific to L2. The fact that the participant could do it easily suggested that understanding L2 concept was clearly achievable.

Conversely, the grammatical function construct (use) of the academic words was rarely achieved in the sentence writing task, and they needed explicit mediation of providing the correct form and/or sentence and explanation, especially the adjective, adverb, and verb. It was clear that the participants mostly could not place the adjective and adverb properly because they had not understood the positions of these word classes from the brief teaching before the first GDA session. Also, using the word's grammatical function in a sentence required syntactical knowledge. Nevertheless, the previous results of the part of speech task revealed that the participants still did not understand the relationship between the part of speech and sentence structure. Thus, it was understandable why they still could not use the grammatical functions of the target words correctly in a sentence. In addition, using a word's part of speech to match the sentence structure was considered productive word learning, and Nation (2011) has mentioned that productive word learning was generally harder than receptive one. The findings agreed with those from Stubbe and Nakashima (2017) with high-beginner Japanese university freshmen because their students sometimes produced incorrect sentences although they translated the target words' meanings correctly, and the student's actual word meaning knowledge was not normally displayed by their written sentences. Another construct that the participants did not achieve was the collocations construct (use) because the other words or types of words used with the target academic words were frequently ungrammatical or obscured the sentence's meaning. This was probably due to the participants' lack of grammatical knowledge as judged from their proposed ideas to solve only minor errors such as adding a conjunction "and," a morpheme "s" for a plural noun, and correcting misspelling. However, dealing with adjectives, adverbs, verb tenses, the passive voice, and the whole sentence was beyond their abilities, and explicit mediation of providing the correct forms and explanation was needed. Giving explicit mediation to the students also appeared in Mirzaei et al. (2017) when the students translated the given 15 Persian sentences into English by using the taught English words. In their cumulative GDA, the researchers summarized that implicit mediation was insufficient to help the first interactant, or the first student who received mediation, so explicit mediation was used. However, the amount of assistance for the second interactant, who was observing the

mediation, was reduced to implicit mediation and the researcher concluded that learning occurred. Nonetheless, it is noteworthy that the findings of the present research differed from those of Mirzaei et al. (2017) because explicit mediation was mostly employed to solve major errors in the ill-formed sentences in both GDA and individualized DA. Moreover, too many errors also dispersed the focus on where to apply DA. This was because DA is metacognitive mediation that stretches what has been learned but is still not firmly established (Miller, 2011); therefore, it was difficult to know what grammar the participants had acquired.

In short, the results from both the part of speech and sentence writing tasks demonstrated that the participants understood the academic words' meanings but not their grammatical functions and collocations. Their understanding went as far as the word level but hardly reached the sentence level.

Implications

The results of DA that seemed to help enhance academic vocabulary knowledge of low-proficiency students in both the part of speech task and sentence writing task implied that DA was partly effective because the participants were able to understand the meaning and concept of a word but not its grammatical function when put in a sentence. This suggested that teaching low-proficiency students each part of speech required much more time and practice than a single week. The instructor should employ extensive teaching, utilize an abundance of input, and make use of a variety of exercises to help them establish a background in syntax before DA is used to bring them to the zone of proximal development (ZPD). As for the sentence writing task, it is recommended that the teacher assess students' actual knowledge of syntax and design the task to match it to prevent the occurrence of many grammatical errors that may confuse them and distract them from the target word's grammatical function. In conclusion, DA should be used consistently along the course to ongoingly assess the language constructs that the students have learned. When cognitive problems are found and they are considered beyond the explicit mediation to help students internalize the concept, the instructor can use suitable instructional approaches that match the course design and the students' needs to provide sufficient cognitive knowledge and practices for them. Then DA can be used again as metacognitive mediation to ascertain their learning. This process could occur as a systematically recursive cycle to review the previously learned language constructs.

Limitations and Recommendations

Since the intervention was to be intensive tutorials to help low-proficiency students in pressing need of assistance, the limitation of the present study was the mismatch of the length of the intensive tutorials and the time that low-proficiency students required to learn new knowledge. Learning four new vocabulary strategies through DA tasks in four weeks was too short for them. Another limitation was the task design. The part of speech task was unintentionally open for a test-taking strategy while the sentence writing task seemed too challenging for those who had a low level of syntactical knowledge. Last, the small number of participants and the researcher's entire role of coding and analyzing the qualitative data posed limits to the transferability and interpretation of the findings.

In future studies, a longer intervention for low-proficiency students to internalize and apply the knowledge is recommended. The part of speech task may be designed to more effectively elicit students' knowledge of grammatical functions, and the sentence writing task may be designed to focus more on vocabulary while narrowing down the scope of grammar. Moreover, static tests may be used throughout DA intervention to determine students' self-regulation of a particular construct before moving to another to adjust the intervention to best suit the students' learning. Further research should also be conducted to find ways to help students who learn less in GDA than others since this study found that not all students learned from GDA in the same way and to the same extent. Research should also be carried out to employ different types of DA such as cumulative GDA and computerized DA in academic vocabulary learning to determine which type is the most effective for low-proficiency students as well as for those of other levels of proficiency. Finally, having an expert to help code and analyze the qualitative data is recommended.

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Appendix A

Examples of Part of Speech Task Items and the Mediation Stages

Regular Task:
We are a _(A)_____ _(B)_____ software company who continue developing and improving our products.
A) **rapid, rapidly, rapidity** B) grow, growing, growingly
Type of collocation: _____

Transfer Task:
We should boost _____ _____ to narrow the gap between this area and the city.
rural, rurally, ruralism develop, developed, development
Type of collocation: _____

Mediation Stages for Part of Speech Task:
The stages of giving the prompts are described below.
Stage 1: No feedback
Ask the learners to check the sentence and correct any errors independently first.
a. If the sentence is correct, compliment them and ask them to explain their reasoning.
b. If the sentence is incorrect and learners do not realize it, or their reasoning in (a) is wrong, move on to Stage 2.
Stage 2: Existence of error
The mediator indicates that something is still wrong in the sentence.
Follow (a) and (b) of the previous stages and move to Stage 3
Stage 3: Location of error
The mediator repeats or points to the specific segment containing the error.
Follow (a) and (b) of the previous stages and move to Stage 4
Stage 4: Nature of error
The mediator indicates the nature of the error (e.g., 'the sentence already has a verb.')
Follow (a) and (b) of the previous stages and move to Stage 5
Stage 5: Explanation of how to correct the error
The mediator provides clues to help the learners arrive at the correct form (e.g., 'the collocation needs a noun.')
Follow (a) and (b) of the previous stages and move to Stage 6

Stage 6: Provision of correct form/sentence structure and its explanation
The mediator provides the correct form/ sentence structure and explains the reasons.

Appendix B

Examples of Sentence Writing Task Items and the Mediation Stages

Regular Task:
specifically (adv) = โดยเฉพาะ
= for a particular reason, purpose, etc.
Example: Jantra specifically designed these jeans for women.
S + Adv + V + Object
They bought the land specifically to build a hotel.
S + V + Object + Adv
Your sentence: _____

Transfer Task:
essential (adj) = จำเป็นที่สุด, สำคัญ
= completely necessary; extremely important in a particular situation or for a particular activity
Guiding grammatical pattern: S + V + Object/Complement
Adj before Noun, or Adj after V.be
Your sentence: _____

Mediation Stages for Sentence Writing Task:
The mediation stages included two levels: semantics and grammar and were considered respectively.
Level 1: Semantics
Stage 1: No feedback
Ask the learners to check the sentence and correct any errors independently first.
a. If the sentence is correct, or they can correct any error independently, compliment them. Then ask them to explain their reasoning.
b. If the sentence is incorrect and learners do not realize it, or their reasoning in (a) is wrong, move on to Stage 2.
Stage 2: Existence of error
The mediator indicates that something is still ***semantically*** wrong in the sentence.
Follow (a) and (b) of the previous stages and move to Stage 3.
Stage 3: Location of error
The mediator repeats or points to the specific segment containing the error.
Follow (a) and (b) of the previous stages and move to Stage 4.

Stage 4: Nature of error
The mediator indicates the nature of the error (e.g., 'the sentence can have only one main verb.')
Follow (a) and (b) of the previous stages and move to Stage 5.
Stage 5: Explanation of how to correct the error
The mediator provides clues to help the learners arrive at the correct form (e.g., 'the adjective is placed after a verb to be or a non-action verb.')
Follow (a) and (b) of the previous stages and move to Stage 6.
Stage 6: Provision of correct form/sentence structure and its explanation
The mediator provides the correct form/sentence structure and explains the reasons.
Level 2: Grammar
Stages 1-6 are repeated but the focus is on grammatical errors.

Appendix C

Scoring Rubric for the Sentence Writing Section
in the Pretest, Immediate Posttest, and Delayed Posttest

2 points are given if the target word presents its concept appropriately in the sentence. Its grammatical function is used correctly as well as other words used with it. It may contain some minor grammatical errors, but they do not interfere with intelligibility.

1 point is given if the target word presents its concept unclearly in the sentence. Its grammatical function as well as other words used with it are incorrect or hinder intelligibility.

0 point is given if the target word does not present its concept in the sentence. The sentence is unintelligible or no English sentence is written.