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USING PICTURE- ASSISTED LEXICAL INPUT APPROACH TO TEACH VOCABULARY TO THE POST-LINGUAL DEAF STUDENTS

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Abstract
English has been one of the compulsory subjects for special schools in Indonesia. However, there have been a rather limited number of studies conducted regarding the teaching of English under the framework of Special Education. Responding to this gap, this current study aimed at investigating whether a particular language teaching approach called 'Lexical Input Approach' assisted by series of pictures could provide a desirable effect on post-lingual deaf students' vocabulary mastery. This research employed a pre-experimental Single Subject with a multiple base (A-B-A-B) design. The sample included three 8th grade Junior High School students with the similarity of ages and hearing-loss history. The primary data in this study were taken by using assessments and analysed statistically by calculating the *Percentage of Data Points Exceeding the Median* (PEM). The findings indicated that there was an improvement in the students' vocabulary scores after the treatments (from 41/ novice advanced category to 46 and 51/ novice high category). Thus, it could be concluded that using Picture-Assisted Lexical Input Approach was effective to improve English vocabulary mastery for post-lingual deaf students.

Keywords: Lexical Input Approach, Post-Lingual Deaf, Vocabulary Mastery

Introduction
Students with disability need more specialized instructions to help them acquire and master any languages for their daily communication. In Indonesia, English has been a compulsory subject that must be learned by all students, including students with special needs. Unfortunately, while the curriculum seems to be carefully and thoughtfully constructed for the normally developed students, it is a different case for students at special schools. Despite the fact that there have been a growing number of students with special needs being able to go for an inclusive education at normal schools, most of them still enrol in special schools. Furthermore, these students, including the ones with deafness, have to learn English as a Foreign Language in the same way their normally developed counterparts are required to do (Adi and Fadhilah, 2017).

Post-lingual deaf students are special in the way that they do not have a problem with their language production system yet their language stock is rather limited. The language processing for post-lingual deaf students is different from that of the pre-lingual ones. This is due to their deafness which appears after language acquisition and stabilization (Lazard, Innes-Brown and Barone, 2014). Since they can no longer rely on their hearing as means of receptive communication, the post-lingual deaf people must adapt and use strategies that "benefit from visual images" (Birinci, 2014). Moreover, when they learn languages, they cannot learn verbal/ oral language elements and skills i.e. speaking, listening and pronunciation and mostly focus on building the written language skills and elements such as reading, writing, grammar and vocabulary. Therefore, knowing the importance of mastering vocabulary for comprehension and communication, teachers dealing with post-lingual deaf students might have to resort to the strategies or techniques which can best facilitate their students' vocabulary learning through visual aids/ images.

One of the approaches that can possibly be implemented to teach and learn vocabulary through visual aids/ pictures is the Lexical Input Approach. A number of empirical studies conducted in different contexts have indicated the effectiveness of this particular approach especially in terms of teaching English language skills and components such as vocabulary (Verspoor and Winitz, 1997; Kavaliauskienë and Janulevièienë, 2001; Karoly, 2005; Ping, 2007, 2012; Zu, 2009; Supardi, 2016; Abdulqader, Murad and Abdulghani, 2017; Attya, Qoura and Mostafa, 2019). However, there is yet a related study focusing on the implementation of this approach to teach students with special needs, in this case post-lingual deaf students. Thus, addressing this gap, this research was conducted with a specific objective to investigate whether the Lexical Input Approach assisted by pictures would be effective for enhancing the post-lingual deaf students' vocabulary mastery. Moreover, to provide clear scopes, the research questions addressed in this research were formulated to reach the following objectives: 1). Implementing Picture-Assisted Lexical Input Approach to teach English vocabulary to the post-lingual deaf students; and 2). Finding out whether the implementation of Picture- Assisted Lexical Input Approach had a significant effect on the post-lingual deaf students' vocabulary mastery.

The Lexical Input Approach

The Lexical Input approach was primarily based on Krashen's hypothesis (1983), arguing that meaningful input is "one of the most important things we have to consider in language acquisition". The meaningful input itself might be in the forms of components of different lexical fields taught through implicit instruction, focusing on a particular lexical field. In addition, it was also developed based on some important principles of the Lexical Approach proposed by Lewis (1993). The Lexical Approach was conceptualized by Lewis (1993) as "developing learners' proficiency with lexis, or words and word combinations" and that "language consists of grammaticalized lexis, not lexicalized grammar". Lewis (1997) argued that language fluency and accuracy could be reached mostly by retrieving and combining ready-made chunks of language, thus the ability to chunk language would be a crucial aspect for understanding how language functions. Moreover, several studies have been conducted related to Lexical

(Input) Approach effectiveness for language learning focusing on various grammatical and lexical aspects such as the use of collocations and lexical chunks (Verspoor & Winitz, 1997; Kavaliauskienë and Janulevièienë, 2001; Karoly, 2005; Ping, 2007, 2012; Zu, 2009; Supardi, 2016; Attya, Qoura and Mostafa, 2019). However, only two of these previous studies made use of pictures to convey the Lexical (Input) Approach, i.e. Verspoor and Winitz (1997) and Ping (2007, 2012).

Verspoor and Winitz (1997) did two experiments investigating the effect of vocabulary instruction using the lexical input approach as a strategy for providing comprehensible input to the non-native learners of English participating in a 15-week ESL program at an American University. The students were assigned to listen to audio tapes accompanied by booklets with texts and pictures and could learn at their own pace during the treatment. The findings indicated that the students who learned by using this approach achieved better than the students who did not. While this approach did not emphasize on the teaching of forms or grammatical structure either explicitly or implicitly, giving input only was found to be effective to improve the grammar mastery of the students (Verspoor & Winitz, 1997). Meanwhile, Ping (2007; 2012) used Picture- Assisted Lexical Input Approach in an experiment to teach English grammar and vocabulary to the non-English Department university students in Indonesia. Different from the study done by Verspoor and Winitz (1997), the input in Ping's study was conveyed through a computer mediated program. This computer mediated program was chosen in the place of teachers so that the participating students could get native speaker input and work at their own pace (i.e. self-directed learning). Moreover, the computer program used in the treatment of this experimental study delivered sufficient amount of meaningful input supported by both audio and visual aspects (sound and pictures). The findings revealed that lexical input approach conveyed through a computer mediated program had a statistically significant effect on students' grammar and vocabulary achievement. In addition, the participating students seemed to be more motivated when learning grammar and vocabulary through the computer mediated program (Ping, 2007; 2012).

Therefore, taking into consideration the basic rationale as well as the research procedures, this current research would specifically replicate the studies conducted by Verspoor and Winitz (1997) as well as Ping (2007, 2012). However, the main difference would lie on the subject (i.e. the other two studied normally developed ESL and EFL students whereas this research would study EFL students with disabilities) and the type of experimental study (i.e. classic experimental versus single subject design).

Post-lingual Deafness

Post-Lingual Deafness is a unique case of hearing impairment because post-lingual deaf students have attained speech and language patterns some time before they lost their hearing abilities (Bala & Rao, 2004). Thus, the language processing and development of post-lingual persons/ students are different from the pre-lingual ones because they were not born deaf. Nevertheless, due to the impairment, they can neither understand speech without visual cues nor rely on their hearing as a means of receptive communication. In addition, the duration of

the deafness contributes to the severity of speech intelligibility deterioration (Shimizu, Sakaguchi, Iwasaki, Arai, Mano, Kawano and Shirai, 2019).

Students with post-lingual deafness have to use the more visual mode receptive communication such as lip reading, sign language and text reading. As Casey and Wolf (1989) stated that for these students, visualization ability, which is one of the visual literacy competencies, and the ability to understand and communicate process play an important role in their language development. Taking this knowledge into account, teachers who teach these students have to select some appropriate methodologies or approaches which are focusing on visualization ability instead of auditory system in order to develop communication skills and also their previous language stock (schemata).

Teaching Vocabulary to Post-Lingual Deaf Students Using the Picture-Assisted Lexical Input Approach

Based on the abovementioned concepts, the Lexical Input Approach could be considered as one of the approaches to be implemented for teaching language skills and elements, particularly vocabulary, to post-lingual deaf students. The focus of this approach is on developing learners' proficiency with words and word combinations which can be conveyed through various modes such as visual/ pictures as appropriate input. Furthermore, teaching vocabulary by using pictures has been a familiar practice in the classroom, including for the students with hearing impair or hard-of hearing conditions. In addition to the use of *realia* or the real-life objects, pictures have been considered as effective to present vocabulary particularly at the beginner level, in which the pictures are used to explain the meaning of words or to create situations and concepts. Birinci (2014) investigated the effectiveness of using visual materials in teaching EFL vocabulary to deaf students in Turkey. The findings of her study implied that using visual materials gave better results than the use of sign language. Meanwhile, another study done by Gallion (2016) revealed that the flash card combined with picture and sign language provided better results of vocabulary gain for students with hearing impairment.

Furthermore, as previously mentioned, the post-lingual deaf students do not have any cognitive barriers in acquiring the language. Yet, the hearing disability they have might hinder them from getting necessary information, including the words and meaning of words, successfully. Therefore, the picture-assisted lexical input approach in this study would be used specifically as a vocabulary acquisition device for post-lingual deaf students. The concept of comprehensible input was also added to the framework underlying this study, as the Lexical Input Approach itself was originally developed based on Krashen's Input Hypothesis. Moreover, the input-based approach to language learning has been recommended by a number of other prominent EFL figures such as Nation (2007) who included it in his Four Strands model of English Language Learning, Day & Bamford (1998) as well as Renandya & Jacobs (2016) who have worked immensely on comprehensible input in the framework of extensive reading and listening activities. Particularly in the Indonesian context, Renandya, Hamied & Sukamto (2018) have also endorsed an input-based approach to promote proficiency. Thus, the conceptual framework for this study can be illustrated by the figure below.

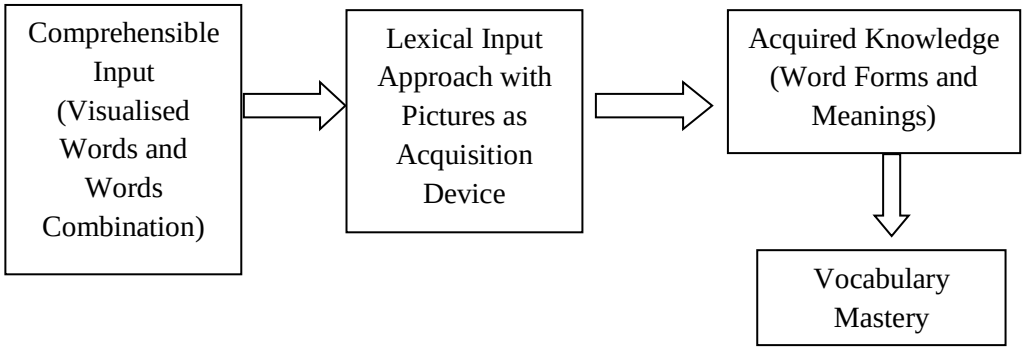


Figure 1: Teaching Vocabulary by Using Picture-Assisted Lexical Input Approach to Post-Lingual Deaf Students

Method

The research design employed in this research was Single Subject Design. According to Fraenkel, Wallen and Hyun (2019), Single Subject Designs are adaptations of the experimental time series design, commonly used to study the changes in behaviour and individual exhibit after exposures to an intervention or treatment. This type of research is also considered as appropriate for researchers who would like to study children with disabilities, with only a small number of participants available. Specifically, the design used in this research was the Multiple Base A-B-A-B Design, in which the data were collected on several subjects with regard to a single behavior (Fraenkel, Wallen and Hyun, 2019). This design was chosen primarily because the dependent variable (vocabulary mastery) was not expected to return to the prior condition after the intervention (Christ, 2007) and the multiple baselines created could be used as a control.

In the so-called baseline phase, the students' vocabulary mastery prior to being taught by using picture-assisted lexical input approach was observed and assessed. Meanwhile, in the intervention phase, vocabulary teaching and learning were done by using picture-assisted lexical input approach; optimizing the visual aids (texts and pictures) while minimizing the sign language use. Then, the students' mastery was measured by using a written vocabulary assessment.

This research took place at a Junior High School for students with special needs and disabilities located in Samarinda, the capital city of East Kalimantan Province, Indonesia. The students enrolled in this school were mixed in the same classes regardless of their needs and disabilities. In a similar fashion to its regular junior high school counterparts, this school has also followed the national curriculum for Special Education. However, in practice, especially for the English lessons, the teacher had only provided the students with materials for the fifth-sixth graders of Primary School and most of the time the instructions had been given personally (one-on-one teaching) by relying heavily on the sign language use. Moreover, the teacher herself graduated with a Bachelor of Education degree majoring in English Language and received some formal training related to teaching students with special needs and disabilities.

In line with the research problems formulated in this study, the participants of the research consisted of the eight grade students with post-lingual deafness. Three students were further selected purposively based on the sampling criteria

namely the similarities in age (15 years old) and hearing loss history (around 10 years). In addition, all three students had learned to communicate by the sign language since their primary school years.

In this study, the primary data, which indicated the students' vocabulary mastery, were measured by a written assessment, particularly in the form of a dynamic assessment. Dynamic assessment explores the process of language learning through the moments of co-construction of mutual understanding and learning as well as focused on the interaction with unfamiliar situations in social and cultural setting (Bagnato, 2007). Furthermore, the approach in dynamic assessment employed in this study included the following: 1) test-mediate-(re)test; 2) examination of changes between baseline testing and re-testing and 3) careful observation learning behaviours exhibited during mediation (teaching) sessions, which were deemed suitable to use in the context of this current research with post-lingual deaf students (Bagnato, 2007). The written assessment was prepared in the forms of pictorial vocabulary items, which was relevant with the topics being discussed during the teaching and learning activities (both for the treatment and baseline periods). The instances of the assessment items accompanying the instructional materials are illustrated by the following series of pictures:

Pic #1:



Pic #2:



Figure 2: Examples of Picture Series

In order to avoid misunderstanding in analyzing the data obtained from the assessments, a couple of specific scoring systems were prepared. A specific vocabulary rating scale, which included the measurement of two vocabulary depth aspects namely 'grammar forming words' (i.e. form) and 'vocabulary' (i.e. meaning), was used both in the baseline and intervention phases. Furthermore, the Language Proficiency Level and standards in scoring from The American Foreign Service Institute (FSI) were adopted, as follows:

Table 1: Language Proficiency level and Standard in Scoring

NO	Score	Level of Prof.	Description
1	> 34	I	Novice Normal
2	35 – 44	II	Novice Advanced
3	45 – 55	III	Novice high
4	56 – 66	IV	Intermediate Normal
5	67 – 77	V	Intermediate Advanced
6	78 – 88	VI	Intermediate high
7	89 – 99	VII	Proficient Normal
8	100 - 103	VIII	Proficient Advanced
9	104 – 107	IX	Proficient High

The quantitative data in this research were collected during the total of 16 meetings. Each meeting was divided into four different phases, in which every phase consisted of four meetings: two phases were considered as the first and second baseline whereas the other two were considered as the first and second intervention. The general data collection procedures were implemented as follows:

1. In the first and second baseline phases, the teaching and learning activities i.e. using the sign language proceeded normally without any intervention. The students' activities were observed and their vocabulary mastery was assessed.
2. In the first and second intervention phases, the teacher taught the students using the picture-assisted lexical input approach, focusing on both the form and meaning of the vocabulary being discussed which also included the pronunciation. In this step, the teacher elaborated the picture one by one only assisted by written instructions without using the sign language. Moreover, the teaching- learning process, the students as well as the teacher's activities were observed and eventually the students' learning was assessed.

Furthermore, the main data analysis technique used in this research was a statistical test called "Percentage of Data Points Exceeding the Median" (PEM). According to Ma (2006), PEM analysis approaches data by using the Median of phase A (baseline) scores as the basic comparison, as opposed to the highest data point. This would bring about a number of advantages, which include using more collected data, controlling the effect of outliers, and allowing for the calculation of meaningful standardized effect size. Ma (2006) also categorised the interpretation of PEM scores ranging from 0 to 1 as follows:

Table 2: PEM score category

Range	Interpretation
0.9 to 1	Highly effective treatment
0.7 to 0.9	Moderately effective treatment
Less than 0.7	Questionable or not effective treatment

As implied above, the data in this single subject research were not distributed to find out the mean score. Since the data were taken from several treatments, the median score of the data was calculated in the first place to measure the effect size of the data. The formula of median used in this research was as follows:

$$Mdn = \text{b} + (\text{p})(\frac{\frac{1}{2}n\text{-}F}{\text{f}})$$

Note:
Mdn = Median
b = Lower real limit of median score
$\frac{1}{2}\ n$ = half the cases/the number of sample

P = The Number of Interval

F = the number of frequency before the median

f = frequency of median Class

Findings and Discussion

The data in this research were obtained in the forms of quantitative scores and also the visual representation of the students' vocabulary learning progress. The following graph will illustrate overall students' vocabulary mastery before and after being taught by using picture-assisted lexical input approach:

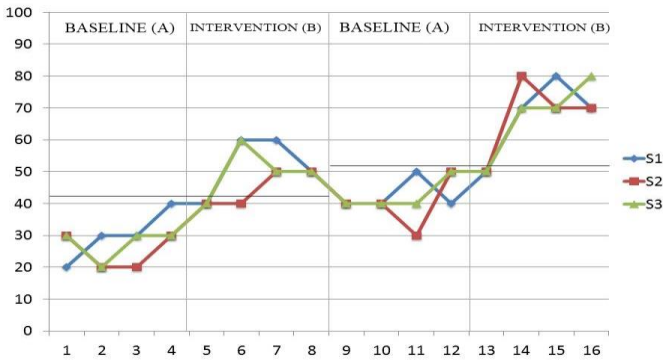


Figure 2. Multiple Baseline Graph of Students' Vocabulary Mastery

The blue line was identified as the first student's performance progress, the red line was identified as the second student's progress whereas the green one was the third student's progress. Furthermore, the students' vocabulary mastery before being taught by the picture-assisted lexical input approach (the baseline condition), is indicated by Table 3 below.

Table 3: Students' vocabulary mastery before the treatments.

Students	Median	PEM Score	Language Proficiency Level
S1	41	0.75	Novice Advanced
S2	41	0.50	Novice Advanced
S3	41	0.75	Novice Advanced

After the treatment phases, the students' vocabulary mastery development can be seen in Table 4 below.

Table 4: Students' vocabulary mastery after the treatments**.**

Students	Median	Deviation	PEM Score	Language Proficiency Level
S1	46	0.25	1	Novice high
S2	51	0.25	0.75	Novice high
S3	46	0.25	1	Novice high

According to both tables above, there were some differences in the students' scores before and after the treatments. In the first phase, reflecting the initial condition of the students prior to being taught by the picture-assisted lexical input approach, the mastery had not reached the good category, in which the median score of the students was 41. This score was classified into the Novice Advanced Category in vocabulary mastery. In addition, this score also influenced the PEM score of the students. Based on the PEM scores of 0.5 and 0.75, the previous teaching learning experiences of these students might have seemed to be rather ineffective in promoting their vocabulary mastery, as these scores could be interpreted as ''questionable/ not effective'' and ''moderately'' effective categories (see the previous Table 3).

After the treatments, there were 2 students who got a median score of 46, namely S1 and S3. Based on this score, both of them could be categorised into the highly effective treatments since their PEM scores increased about 0.25 from the first baseline. Furthermore, it also classified them into the Novice high category for language proficiency level. Meanwhile, the median score of S2 also increased 0.25 from the previous condition which brought S2 into the moderately effective treatment category. Hence, all students eventually had the same level of language proficiency level that was Novice High.

In addition to the overall data, a visual analysis of each student's progress in the form of a line graph was also done to support the analysis and interpretation of the numerical data regarding their respective vocabulary mastery, as follows.

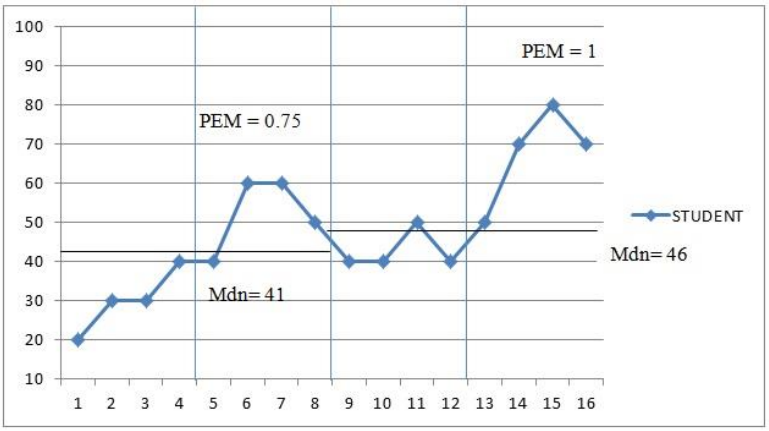


Figure 3. Visual Analysis of Student 1's Vocabulary Mastery Progress

It could be seen from the line graph that in the first baseline (initial condition), Student 1 started with a rather low score of Vocabulary (20 out of 100) and then at the end of the first treatment, it increased into 50 (after reaching 60 at two data collection points). The score dropped to 40 at the beginning of the second baseline but then gradually improved and reached 70 by the end of the second treatment. The highest score that S1 achieved was 80 at one point during the second treatment.

Meanwhile, Student 2's vocabulary mastery progress is visualized by Figure 4 below.

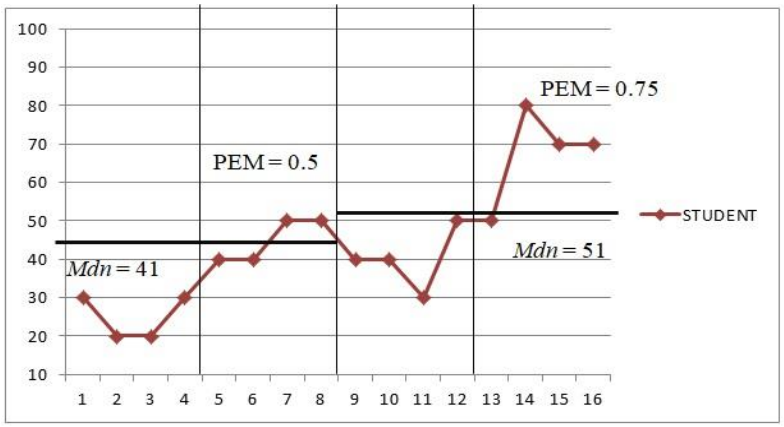


Figure 4. Visual Analysis of Student 2's Vocabulary Mastery Progress

The line graph shows that Student 2 got the score of 30 at the beginning of the first baseline (the initial mastery), The score increased to 40 at the beginning of the first treatment, reaching the highest score of 50 at two assessment points before dropping back to 40 when starting the second baseline. The highest score of S2, i.e. 80, was found at one assessment point during the second treatment and the final vocabulary mastery score obtained by S2 at the end of the treatment period was 70.

As for Student 3, the vocabulary mastery progress during the experiment can be displayed as follows.

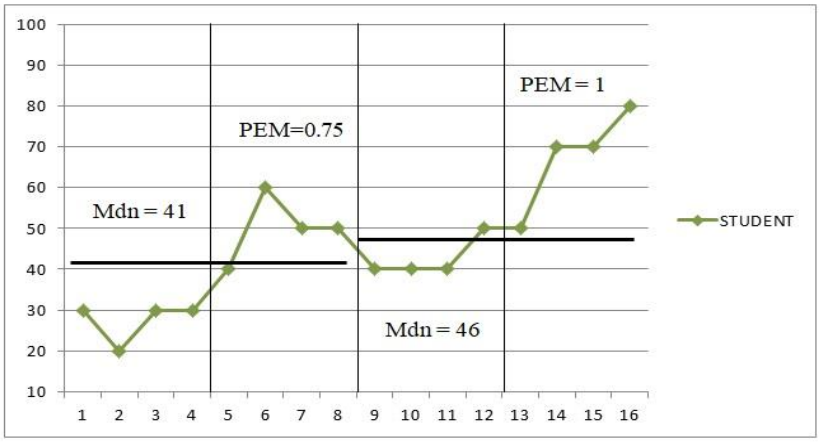


Figure 5. Visual Analysis of Student 3's Vocabulary Mastery Progress

The line graph revealed that the initial vocabulary mastery of Student 3 was similar to Student 2, in which both obtained the score of 30 out of 100. The score of S3 went up to 40 at the beginning of the first treatment and the highest score was 60 during this phase. The vocabulary mastery of S3 tend to be stable at the scores of 40-50 in the second baseline and improved steadily until reaching the highest score of 80 at the end of the second treatment phase.

Based on the analysis of both individual and overall data above, it could be implied that the treatment by using the picture-assisted lexical input approach was statistically effective in promoting the post-lingual deaf students' vocabulary mastery development. Thus, the Ha (Alternative Hypothesis) formulated in this study was accepted and the Ho (Null Hypothesis) was rejected. More specifically, Ma (2006) stated that if treatment was ineffective, data point would be continually fluctuating around the middle line. The quantitative data of this research indicated that the improvement and the scores did not fluctuate in the middle line or median line, which implied that the treatments were relatively effective. Furthermore, these findings were generally in line with the findings of previous studies concerning the effect of picture-assisted lexical input approach on EFL students' vocabulary mastery, most notably the ones done by Verspoor & Winitz (1997) and Ping (2007; 2012) which were done with the typical normally-developed students. It can be thus argued from the current findings of this study that this input-based approach might work with all types of students or learners, including the ones with physical disabilities.

Regarding the effectiveness of using pictures in English vocabulary instructions for students with hearing impair/ deafness, the findings of this study were also found to conform the results of previous studies, in particular those of Birinci (2014) and Gallion (2016) despite the differences in the teaching approaches. Birinci (2014) argued that the use of visual materials (pictures) was more effective than the use of sign language whereas Gallion (2016) stated that the combination of the two brought the most effective results. In this study, the treatment procedure was almost similar to Birinci's in a way that there was no sign language involved in the process. The Lexical Input Approach used in the treatment phases were then statistically tested as giving out a better improvement

than the baseline phases in which the sign language was used. However, since this study did not make an effort to combine of the sign language and picture as what was done by Gallion (2016), a direct comparison on the effectiveness of these two approaches cannot be appropriately done.

Conclusion

To conclude, the empirical findings of this research have revealed that the picture-assisted lexical input approach could potentially promote post-lingual deaf students' EFL vocabulary mastery. Based on these findings, it is therefore recommended that teachers who are dealing with post-lingual deaf students implement this particular approach in addition to the traditional method of teaching, namely using the sign language, in order to develop students' vocabulary mastery in a more effective way. Eventually, since this study could yet properly address the possibility of conveying the picture-assisted Lexical Input Approach in combination with the sign language, future researchers are encouraged to try this alternative out and then assess its effectiveness.

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